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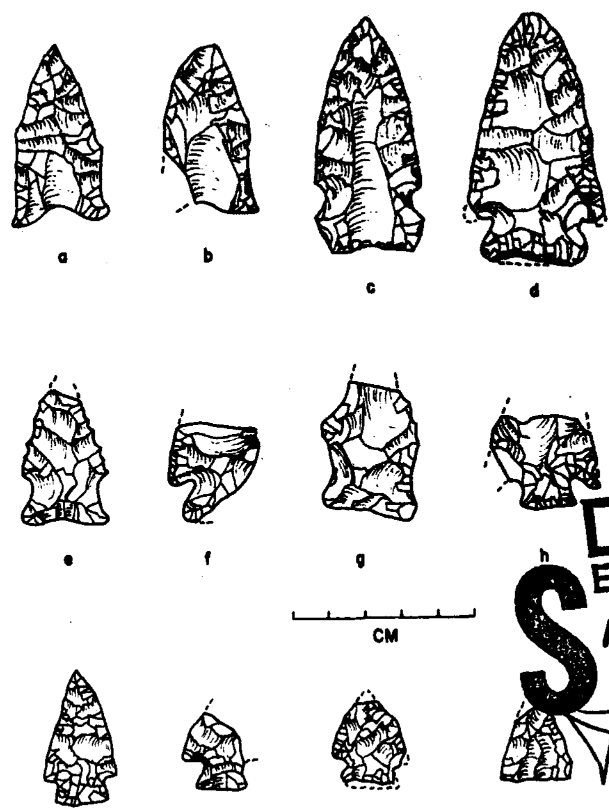
Mitigation of Adverse Effects of Long Branch Lake Project upon the Archaeological Resources Part 1



By Larry Grantham

DACW41-78-C-0103

1986

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LONG BRANCH LAKE ARCHAEOLOGICAL RESOURCES

MITIGATION OF ADVERSE EFFECTS OF LONG BRANCH LAKE PROJECT UPON THE ARCHAEOLOGICAL RESOURCES

FINAL

by
Larry Grantham

AN ARCHAEOLOGICAL PROJECT CONDUCTED FOR

U.S. ARMY CORPS OF ENGINEERS

KANSAS CITY DISTRICT

by
NORTHEAST MISSOURI STATE UNIVERSITY
KIRKSVILLE, MISSOURI

DACW41-78-C-0103

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The report contains the findings of an archeological investigation conducted at the Long Branch Lake project, located in the Chariton River Valley, in northeastern Missouri. Documentation is provided for 7,000 years of continuous occupation of the river valley from the Middle Archaic to the Historic periods. Subsistence, settlement, and trade patterns are discussed.

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LONG BRANCH ARCHAEOLOGICAL RESOURCES:
MITIGATION OF ADVERSE EFFECTS OF LONG BRANCH
LAKE PROJECT UPON THE ARCHAEOLOGICAL RESOURCES

by

Larry Grantham

ABSTRACT

During the summer of 1978, mitigation by testing and excavation of selected sites, to be affected by construction and impoundment was conducted in Long Branch reservoir, Macon County, Missouri. Extensive excavations were undertaken at eight sites (23MC55, 56, 65, 69, 74, 142, 149, and 298). Test excavations were undertaken at twenty-nine previously recorded sites and two newly recorded sites (23MC54, 58, 61, 71, 72, 73, 77, 92, 96, 98, 99, 100, 101, 102, 103, 105, 116, 117, 120, 135, 136, 148, 152, 153, 225, 238, 321, 332, 333, 347, and 348). Twenty-three previously recorded sites were recollected, and twenty-six new sites were recorded. A preliminary settlement-subsistence model was advanced in the survey report for testing in the 1978 field season. Preliminary analyses of artifacts, culture history, settlement patterns, and subsistence patterns obtained by excavation necessitates that our original model be modified slightly to accomodate the new data.

PREFACE

Long Branch Lake has been a project in which I have been involved for the past eight years. Testing and excavation has been conducted in the reservoir since my initial involvement in the project. This has been fortunate in that many of the analytical sections have been built on that knowledge. We wished to do considerably more in the analytical sections than actually was performed. Unfortunately, time constraints were prohibitive. As commitment to the project still remains, all of these will eventually be performed and will later appear in professional journals.

While cognizant that much of what was desirable in the analytical sections was not completed, we hope that the following constitutes not only a broader base of knowledge of the artifacts and prehistoric sequence in the area, but also a stride forward in the knowledge of man and adaptive processes in the Prairie Peninsula. We are fortunate in that both cultural stability and cultural change are evident in this small segment of the broader-reaching settlement-subsistence system.

Several people deserve mention for contributions to this project. Initially, I must thank Dr. W. Raymond Wood who allowed me to start on this project, and who is largely responsible for my attitudes and views of archaeology. My thanks go to Dr. Dean A. Rosebery who allowed me to continue with the project and who stuck with me through considerable adversity on this project.

I also wish to express thanks to the crew members - Mike Higgins, Cliff Kurrus, Sisel Johanneson, Randy Walker, Hugh Thomas, Brad Mitchell, Jackie Guyton, Jim Brady, Forest Frost, Chris Hansman, E. Dederick Carrasco, Roger Boyd, and the numerous other people who worked for a short time and to others who volunteered time.

Last, but certainly not least, I wish to express my appreciation to those who typed this manuscript - Marsha Redmon and Sandi Bahr. They had to put up with expanded deadlines and my erratic schedule with little complaints.

All those who have given aid must, of course, be absolved from responsibility for any errors, either substantive or interpretive, within the text of this report. Certainly, every project of this nature is a learning experience, and this one has taught me a lot.

LDG
June, 1982

TABLE OF CONTENTS

PART 1

TABLE OF CONTENTS (Cont'd)

PART 2

TABLE OF CONTENTS (Cont'd)

PART 2 (cont'd)

PART 3

TABLE OF CONTENTS (Cont'd)

PART 3 (cont'd)

PART 4

TABLE OF CONTENTS (Cont'd)

PART 4 (cont'd)

TABLE OF CONTENTS (Cont'd)

LIST OF TABLES

PART 1

PART 2

LIST OF TABLES (Cont'd)

PART 2 (cont'd)

PART 3

LIST OF TABLES (Cont'd)

PART 3 (cont'd)

PART 4

LIST OF FIGURES

PART 1

LIST OF FIGURES (Cont'd)

PART 1 (cont'd)

PART 2

LIST OF FIGURES (Cont'd)

PART 2 (cont'd)

PART 3

LIST OF FIGURES (Cont'd)

PART 3 (cont'd)

PART 4

LIST OF FIGURES (Cont'd)

PART 4 (cont'd)

INTRODUCTION

Long Branch reservoir (Figure 1) is a multipurpose project authorized under the Flood Control Act of 1965 (P.L. 89-298). The dam is located in Macon County on the East Fork of the Chariton River just north of U.S. Highway 36 and two miles downstream from the confluence of the Long Branch with the East Fork. The dam will control a drainage area of 109 square miles. At the multipurpose pool level of 791 feet a.m.s.l., the lake will have a surface area of 2,430 acres with a capacity of 35,000 acre-feet. At the full pool level of 801 feet a.m.s.l., the lake will have a surface area of 3,670 acres with a capacity of an additional 30,000 acre-feet. For purposes of project operation, a total of 8,000 acres were purchased in fee simple.

Previous Research

In order to understand the existing research objectives, it is necessary to understand the course of archaeological work in the reservoir. Unlike many reservoir projects, a great amount of work was done prior to the first intensive survey of all project lands. This course of work has had a strong influence on the present course of research.

Axton Mound (23MC46) was tested by R. A. Marshall in the spring of 1962 (Shields 1966:40). This mound lies some 400 yards east of the East Fork and just north of the dam axis of the Long Branch Lake. The mound was estimated to be fifteen feet in diameter and about fifteen inches high. The construction was earth and stone, the latter exhibiting no pattern. Three, five-foot squares were excavated. Evidence of only a single burial was recovered along with a mortar, a pitted stone, burned chert, and weathered limestone.

Potter (1970) performed the initial survey of the reservoir in 1969. His work consisted mainly of contacts with local collectors, and eight sites (23MC54-61) were recorded during the two-week period of the survey.

Graham (1977) resumed work in the reservoir in the summer of 1972. Three new sites (23MC62-64) were recorded, and systematic surface collections were undertaken at 23MC56, 58, 59, and 61. Three, two-foot test squares were excavated at 23MC59, and five, two-foot test squares were excavated at 23MC57.

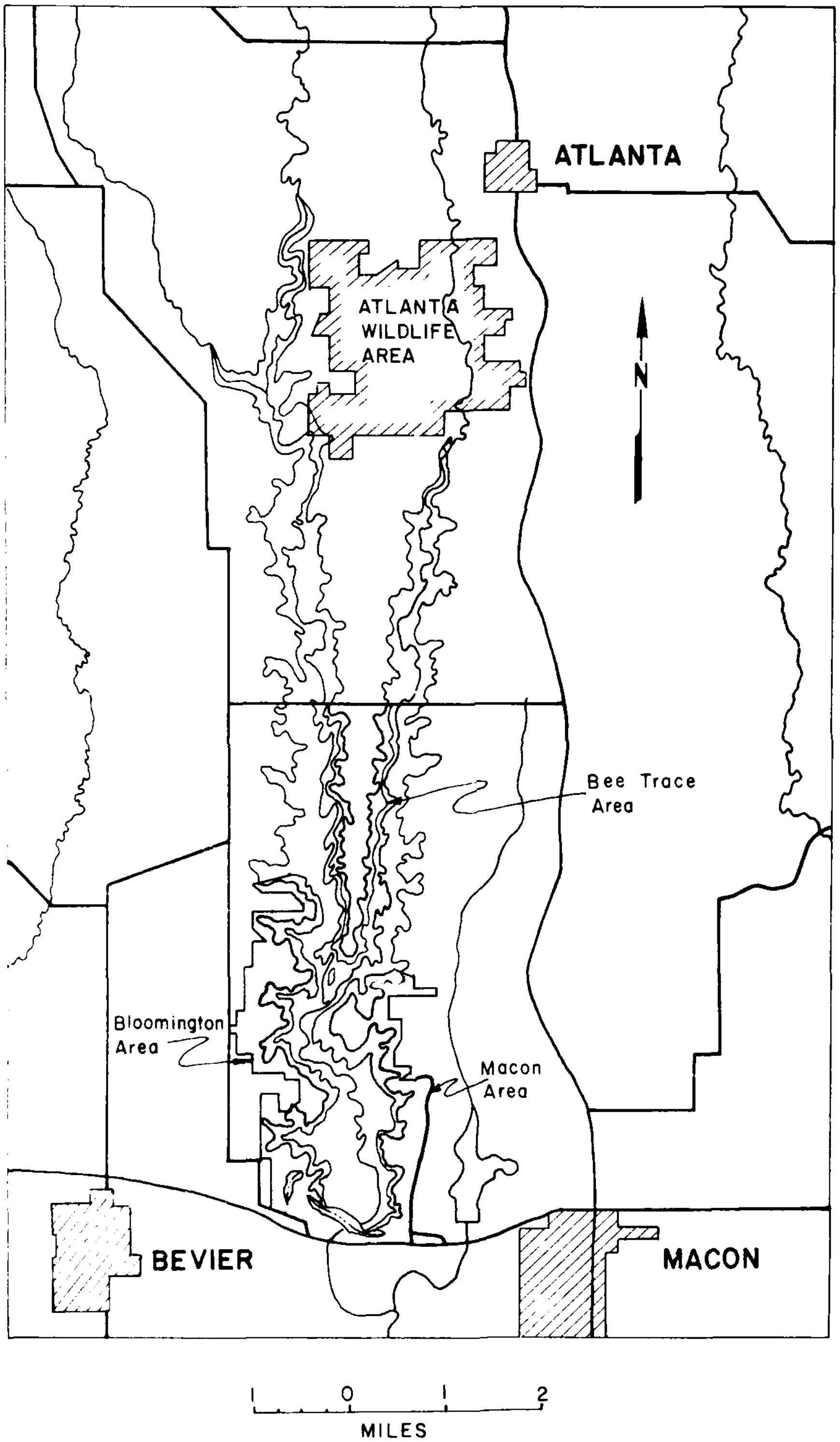


Figure 1. Long Branch Lake and vicinity.

In the summer of 1974, Grantham (1979) continued work in the area. Five new sites (23MC65-69) were recorded, and four sites (23MC57, 23MC61-63) were revisited. Sites 23MC58 and 59 were tested with a single five-foot and three-foot test square respectively. Nine, three-foot test squares were excavated at 23MC55, and thirteen, five-foot squares were excavated at 23MC65. Profile trenching and plow zone stripping of trenches at 23MC56 was conducted, as well as the excavation of a five-foot test square and a ten-foot control square.

In the summer of 1975, Grantham (1979) continued work in the reservoir. Fifteen new sites (23MC70-84) were recorded, and eleven sites were tested. Two, five-foot test squares were excavated at 23MC57, 61, 72, 74, 75, and 77. Four, five-foot test squares were excavated at 23MC70. More extensively tested sites included 23MC56 with eight, five-foot squares, 23MC58 and 66 with ten, five-foot squares, and 23MC74 with six, five-foot squares. Two opposing quadrants were excavated in mound three of 23MC69.

In the summer of 1976, Northeast Missouri State University and the Corps of Engineers entered into an agreement (contract DACW41-76-C-0116) to perform an intensive archaeological, historic, and historic architectural survey of the reservoir. The archaeological part of the survey (Grantham 1977) resulted in the recording of 262 new archaeological sites (190 prehistoric and 72 historic). In addition, thirty-one previously recorded sites were revisited.

In the fall of 1976, the original contract with the Corps of Engineers was modified (Modification No. P00001) to include testing of selected sites and recollection of other sites in order to be better able to assess the significance of selected sites for future work in order to avoid delaying the clearing contractor in the Long Branch area. One five-foot test square was dug on sites 23MC71, 96, 98, 100-102, 106, 116, and 120. Two, five-foot test squares were dug on sites 23MC55, 58, 71-73, 92, 103, 117, 135, 136, 142, 148, 152, 298, and 321. Three, five-foot test squares were dug at sites 23MC54, 77, and 238, and four, five-foot test squares were dug on sites 23MC56 and 149. Surface collections were made on sites 23MC46, 66, 86-90, 97, 104, 124, 131, 133, 139, 150H, 151H, 155, 156, 158, 159, 230, and 271. Twenty-five new sites were recorded and two of these had two, five-foot test squares excavated on them.

Prehistoric Cultural Sequence

Cultural "sequence" here is not meant to imply cultural entities. For purposes of chronological control, we have adopted the temporal units devised elsewhere for Missouri (Chapman 1975). These units were based on generalized traditions with periods indicative of technological, exploitative, and settlement systems differences. In the reservoir area, these "periods" do not represent the distinct units as characterized elsewhere in the state. Only two major shifts in exploitative and settlement systems have been identified to date. These "periods" do represent technological and/or stylistic shifts. For purpose of temporal control, we have attempted to retain these units as far as practical. The "periods" should be considered somewhat tentative until other dating techniques have been applied.

Paleo-Indian (12,000 - 8,000 B.C.). This period, represented in North America by evidence of nomadic groups of hunters producing fluted forms of projectile points, is poorly understood. As yet no evidence of groups inhabiting the area and producing fluted forms of projectile points has been found. Although such processes as erosion and site burial have been advanced as alternatives to explain the absence of such material, these cannot be readily accepted for the reservoir area. It would appear that Paleo-Indian utilization of the area is minimal at best.

Dalton (8,000 - 7,000 B.C.). This period was proposed by Chapman (1975:29) to encompass the time of change from major emphasis on hunting to foraging, a transitional period between the Paleo-Indian and the Archaic. Dalton Serrated (Chapman 1975:245-246) and Dalton-like forms are characteristic of the period. These are common throughout the Chariton system. Unfortunately, we do not have any measure of whether these forms belong to Chapman's (1975) proposed Dalton period or whether they belong to the Early Archaic. The only Dalton-like projectile point recovered from the reservoir area appears to be associated with other forms which are believed to be more typical of the Early Archaic. Thus, we have no strong evidence for occupations during, or the validity of, a Dalton period in the reservoir area.

Early Archaic (7,000 - 5,000 B.C.). Probably the first occupations in the reservoir date to the Early Archaic period. Dalton-like and possible Hardin-like materials appear to have probably Early Archaic affinities. Forms such as St. Charles Notched and Hidden Valley Stemmed

(Chapman 1975) are as yet absent from collections and excavations in the reservoir area. A single Graham Cave Notched point has been recovered from excavations. Side-notched, convex-based forms such as those from western Iowa (Anderson 1974) are present in collections from the reservoir. Side-notched, concave-based points were found associated with heavily basally thinned, stemmed points and the Dalton-like projectile point from 23MC65 as well as occurring with Dalton Serrated points at the Dalton site (Chapman 1975: Fig. 6-6). So far, evidence of this period is from surface collections only.

Middle Archaic (5,000 - 3,000 B.C.). A large number of Middle Archaic sites occur within the reservoir. At 23MC55 projectile points are characterized by side-notched, straight-based points (Godar Side-notched--Perino 1973:85) and Agate Basin Lanceolate points (Chapman 1975:241-242). The points from 23MC56 are characterized by a variety of side-notched, concave-based points with rounded and square stem-base junctures and lobate-stemmed forms.

Late Archaic (3,000 - 1,000 B.C.). Late Archaic occupations in the reservoir are somewhat ubiquitous. A Late Archaic component is present on sites 23MC142 and 23MC323. The projectile points are characterized by large, expanding-stemmed points which sometimes are heavily reworked until they appear to be large triangular points, narrow expanding-stemmed points, incurate-stemmed points, square-stemmed points, and large broad corner-notched, straight-based points. A Late Archaic assemblage is also present on 23MC56 including Etley-like points (Chapman 1975:246), Motley-like (Bell 1970:62-63) points, large square-stemmed points, long narrow expanding-stemmed points, and a Smith-like (Chapman 1975:256) basal-notched point.

Early/Middle Woodland (1,000 B.C. - A.D. 500). Woodland sites are difficult to categorize. Early and Middle Woodland have been lumped together here as it is not yet possible to define an Early Woodland period in the reservoir. Although Black Sand Incised sherds have been recovered from the Long Branch area as well as from the Thomas Hill area (Shields 1966b:98), there is still insufficient information to define an Early Woodland period. While it appears probable that there is at least a minimal Early Woodland occupation in the area, there is as yet no way to separate it from earlier or later material.

Middle Woodland occupations appear to be fairly numerous. Middle Woodland occupations are based largely on Snyders-like points. Smoothed exterior pottery, often with punch and boss decoration, appears to be the most common pottery associated with these points. Although such pottery appears to be common throughout the Woodland period in Iowa (Brown 1967; Anderson 1975), their occurrence as single decorative attributes on Middle Woodland ceramics to the east (Fowler 1955) as well as to the south (Kay 1975) appears to be less common. Hunt (1976:4-5) notes that punch and boss decorations appear to be more common in Middle Woodland ceramics and their occurrence declines in Weaver ware (Fowler 1955).

A single zoned, cord-wrapped-stick-impressed sherd from 23MC65 and zoned dentate sherds from 23MC56 may be indicative of Hopewell-related occupations (cf. Griffin 1952:107) but at present the lack of a large number of Havana ceramics would tend to weaken such a statement. The near-absence of Havana wares from the reservoir area would indicate that either groups making such ceramics did not penetrate into the Long Branch area or that ceramics with such decorative elements were not or were seldom included in wares in that part of a seasonal round. Either or both may have been active processes. Projectile points include contracting-stemmed square-based points, contracting-stemmed rounded-based points, a variety of corner-notched and reworked corner-notched points, broad corner-notched convex-based points, and Snyders and Snyders-like points.

Late Woodland (A.D. 400-900). Late Woodland sites are by far the most numerous and most complex sites. Projectile points include a variety of stemmed, side-notched, and corner-notched points ranging from small to medium in size. In addition, a variety of micro-points are believed to part of Late Woodland assemblages.

Pottery forms also appear to be highly variable. Cord-marked, straight- to slightly flaring-rimmed forms appear on sites often associated with a wide variety of small to medium forms. Corner-notched forms are the most common, although serrated and unserrated side-notched points, stemmed, and basal notched forms also occur. Although all are larger than micro-points, few are as large as those of the preceding periods.

Micro-points such as Koster corner-notched (Perino 1973:166) and small corner-notched forms appear to be associated with more complex pottery forms. These include cordmarked exteriors with interior punch and boss and exterior lip notching with a cord-wrapped dowel, smoothed exteriors with interior and exterior punch and boss and punctates, smoothed exteriors with interior and exterior cord-wrapped dowel impressions, and cordmarked exteriors with interior punch and boss and cord-wrapped dowel impressions or notching on interior and exterior rims. All of these forms appear to be identical to Weaver ware from the Salt drainage (Hunt 1976) and from Illinois (Fowler 1955).

Other projectile point forms include small corner-notched, concave-based points, Scallorn points (Bell 1960:84), a number of unclassified small points, possibly reworked larger corner-notched points, and possibly contracting-stemmed points.

Mississippian/Oneota (A.D. 900 - 1700). Although the period is more appropriately referred to as the Mississippian "period", Mississippian also refers to a specific tradition. In order to avoid confusion, we have combined the term Oneota (also an aspect or tradition) with Mississippian to designate the period. There are relatively few late sites in the reservoir area. These sites are characterized by a variety of point types, all being varients on the unnotched triangular micro-point. These include single side-notched, single side-notched and basal notched, and double side-notched. Although these types are often associated with good ceramic evidence indicative of Mississippian period occupations (cf. Perino 1971), Hunt (1976) reports triangular points from Late Woodland sites in the Salt River area. However, this does not appear to be common in the Long Branch area. A single site (23MC65) appears to contain large numbers of multiple-notched forms which appear to be characteristic of a Mississippian component, while the other sites in the area appear to represent Oneota components.

Historic Aboriginal (A.D. 1700 - present). No evidence of historic trade goods comes from any of the late sites and precludes the identification of any as historic aboriginal period occupations.

Archaeological Research Orientation in Long Branch Lake

Research in the Long Branch area is designed to be directed toward a systemic view of cultural process. The purpose of research in the area was originally directed toward inventory of the sites within the area with the formulation of a model of subsistence-settlement patterns, culture contact, and culture change as well as a plan for management of cultural resources. As a result of that initial survey, recommendations were made for testing and excavation of sites which would be adversely affected by the reservoir (Grantham 1977). The purpose of our research design was then to generate a mechanism for evaluation and revision of previous research models and hypotheses as well as to provide a general problem orientation for the research to be conducted.

As there was no alternative to the reservoir, it was necessary to create as comprehensive a preservation plan as possible. Preservation must be the key to any responsible resource plan. There would be, however, considerable impacts to sites, and these would result in the irretrievable loss to science of a number of sites whose data cannot be replicated.

It was recommended that several actions were necessary to lessen the impact of the reservoir (Grantham 1977). The first of these was preservation. It was recommended that, where possible, sites which fall above the level of the spillway be preserved.

Those sites which were recommended for preservation must be monitored in order to assure that their status does not significantly change from erosion or public usage. The lake filled very slowly, and resulted in severe erosion, especially on the eastern side of the reservoir. It was recommended that sites be monitored in order to assure recovery of as much data as possible. A comprehensive program of monitoring of sites should continue with a periodicity not exceeding yearly monitoring. These should be performed especially after fluctuations in pool level. If the status of sites should change, appropriate action should be taken at that time.

A number of sites have already been sufficiently altered or destroyed which precluded their yielding any significant information. Others (particularly some historic sites) have been altered in such a way and/or are in settings which would probably not result in any additional damage to the site. It was not felt that these required monitoring.

For the sites which would be affected by the reservoir and construction activities, we attempted to include work which would yield maximal information. These were broken down into recollecting of sites, testing only, testing for possible further work, and excavation (Grantham 1977). The sites proposed for excavation would have sufficiently large excavations to obtain assemblage structure, associations, activity areas, and a feature record. These sites were chosen on the basis of activities (all are large seasonal sites or special function sites) with at least one site from each time period which appeared to have a differing cultural assemblage. Thus, there was the one possible Early Archaic site which also contained possible Early Woodland, Middle Woodland, Late Woodland, and Mississippian components. There are two sites with Middle Archaic assemblages and two sites with Late Archaic assemblages. There are three sites with Middle Woodland assemblages and at least two with Late Woodland assemblages.

In addition, sites listed under testing with possible further work included small seasonal sites and small transient camps which needed to be tested. Again, the same criteria was used, in that at least one site with a differing assemblage from each chronological period was included. Most of these sites would require only a limited amount of testing. Other sites have been included on the basis that an insufficient amount of information was known about the sites. Most of these had had only a shovel test on them during the survey, and material density was high but return of material was insufficient in order to make an adequate assessment of the type of site and/or the period represented. It was recommended that these be tested in order to make a fuller assessment of them before impoundment. More extensive work than limited testing might be necessary.

Sites slated for testing only include relatively low density sites (largely hunting camps near the floodplain) which would not be expected to yield a large amount of information but would require a sample of material which would be comparable with other sites in the analytical tests. Again, we attempted to include sites covering chronological periods. The last unit, recollection, included other sites (hunting camps, small transient camps, and small seasonal sites) which appeared to be duplicated by other sites or have comparable samples already. It was recommended that these continue to be collected so that information loss would be minimized.

Research Orientation

Cultural anthropologists deal with extant systems in which parts or the whole of the cultural system may be viewed at once. The archaeologist must deal rather with the preserved material discarded or left as a result of that system. Thus, we are automatically biased towards a view of that part of the cultural systems resulting in the most preserved material - i.e. an economic subsystem. Inferences in social organization or ideology, for example, are considerably more difficult to perceive. These are generally difficult to accurately describe and often can only be done in relative terms. Thus, the general viewpoint of most archaeologists is limited to one which at least emphasizes the economic aspects - i.e. adaptation and adjustment.

The point at which archaeology can most usefully articulate with cultural anthropology is in cultural ecology. As Bates (1953) has said of cultural ecology, it achieves its greatest usefulness as a point of view. Indeed cultural ecology is a point of view, one which articulates points of intersection between culture and environment. People's perception of this articulation has ranged from environmental determinism to environmental possibilism. Both of these are extremes and stress the passiveness of culture in the former and environment in the latter. We agree with Sahlins (1964:132-133) who viewed the relationship between culture and environment as an idea of reciprocity, of a dialogue between cultures and their environments. A culture assigns relevance to particular external conditions, yet a culture is shaped by these, its own, commitments. It molds itself to significant external conditions to maximize the life chances.

The most accessible and immediate relationship between culture and environment occurs in economic adaptations. An adaptation is largely effected through a particular technology. Technology is affected by environment, but the exploitative strategy of any society is largely an adaptation to an environment through technology. Technology is but one facet of a society's total economy. The latter also comprehends a body of generally accepted concepts regarding the control and use of resources, goods, and productive processes (Spoehr 1972:95), and in addition the particular manner in which human beings are organized to carry out activities generally labeled as economic.

For the archaeologist these aspects of economic adaptations have been defined by Struever (1968:135) as a society's subsistence-settlement system. This may be defined as a set of social practices which articulate resource availability and use with the distribution and consumption of raw materials and manufactured goods. In our scheme subsistence practices underlie an interdependent network of biosocial processes which limit group size, composition, and distribution. Hence, we consider subsistence practices predictor variables for estimating the adaptive potential of economic behavior (Krause, Kay, and Leaf 1972:5).

Perception of settlement-subsistence systems varies considerably. The basic unit of the settlement-subsistence system is the settlement. Among most non-sedentary groups in North America, different activities result in structured sites from which one should be able to determine the activities which occurred at a site as well as the size and kind of social grouping. The annual cycle of any such social group results in a series of settlement types, each with identifiable activities and sizes of social groups. The pattern of these settlements in space describes the settlement pattern--i.e. the way a society partitions itself to perform specific functions. The functions are not, however, part of the definition of the settlement pattern. The activities performed at these loci and the exploitative technology employed constitutes the subsistence strategy which characterizes a cultural adaptation. The activities or activity sets defined at a site are derived largely through formal and functional analyses.

Ideally, all sites would be single component sites in order to simplify our model. This is, however, seldom the case. Multi-component sites are generally the rule rather than the exception. Thus, site components must be derived before discussing site functions. Components are most often derived by reference to culture history from other areas as well as the relationships between those areas. Component functions or activities then must be discussed rather than site functions, since activities vary considerably from component to component. By the same token, the size of a component also defines the maximal social group size.

The subsistence pattern and settlement pattern then defines settlement-subsistence system when made in reference to environmental and paleo-environmental constructs - i.e. the exploitative technology to a subsistence strategy, settlement location, and their relation to the environment. These must be viewed synchronically or in reference to chronological units. They may, by reference to ethnographic models, be related to known systems and thus be equated as synchronic cultural-ecological models.

Analyses of the synchronic cultural ecological models may then be carried forward by examining these models in a variety of ways. They may be examined as an adaptation model--i.e. the range of different adaptive strategies employed. This results in a potential adaptive strategy model in that the range of possible adaptations are explored. They may also be viewed as a diachronic cultural-ecological model--i.e. the different adaptations may be examined in relation to each other to explore causation of differences. The shifts between settlement-subsistence systems or cultural-ecological models may also be examined in order to determine what type of economic transformations occurred. All of these then lead to a testable model in which hypotheses of culture change may be tested.

The conceptual model presented here and utilized in this project closely follows that of Fitzhugh (1972), however, several modifications are made to fit our conceptualizations. His individual phases are deleted since all of the various phases of his research strategy do not occur in the order presented and, in fact, are built as a unit. Other modifications include the deletion of aspects dealing with the exploitations of a variety of major physiographic areas since our research is confined to only one.

Research Objectives

The modular construct presented in the original survey report in the reservoir (Grantham 1977) was largely intuitive. This was the original intent. We did not specify testable hypotheses in the original research design because we did not have enough information prior to the survey to make meaningful statements regarding any aspects of the data which we would like to test. That is, we did not know enough about the area to know what is testable with the universe of data with which we would work.

Inductive versus Deductive Approaches

Philosophers of science have debated for years the relative merits of inductive versus deductive approaches to science. Out of this debate, it has become obvious that both have merit, and, indeed, are sometimes difficult to clearly distinguish (Brim and Spain 1974: 3). As archaeologists often operate with a universe of generally unknown characteristics, it is far easier to use an inductive approach.

An inductive approach does not require that any *a priori* assumptions be made about the data. Only the research design need be detailed specifically, and no assumptions made other than the data universe will conform to our model of human behavior specified in the research design. Thus, regularities in the data will, in theory, be detectable and the resulting "model of human behavior" can then be constructed around the levels of correlated data. In many respects, however, the aspects of human behavior which are "interpreted" from the correlations of the recovered data in an inductive model are limited by the types of tests used and the theoretical model of social "reality" (i.e. the research design) used to discover those regularities. If the data universe does not conform to the model of human behavior specified in the research design, the project must be redesigned or reach a dead end. If for example, our underlying assumption in our research design is that society partitions itself in a yearly pattern to maximize resource availability but "reality" indicates there is no difference in the patterning of resource availability, our underlying assumptions are false and no obvious patterns will result.

A deductive approach, however, does require a priori knowledge of the universe. With a deductive model of science, it is simply not possible to test "theories" or modular concepts of social regularities without some knowledge of the universe to be tested. This is a paradox of the deductive, and in some respect an inductive, approach to science. While we wish to be relatively free of bias, the requirements of a priori knowledge in order to know if our data universe will answer our theories inserts some bias into our body of testable hypotheses.

Archaeological work in a reservoir must be seen as a broad on-going process. In most cases, work can be staged into three individual levels -- survey, testing, and excavation. Each of these three parts of archaeology must have specified goals within the research design, as all three generate different types of data. It is not as simple, however, to break down our approach to scientific testing of premises, nor in fact to determine which premises are worthy of testing at different stages of field work.

Our main problem with the use of an inductive approach to archaeology is in the later stages of field work. The use of an inductive approach at the survey level commits one to an inductive approach throughout the entire research project. One cannot utilize an inductive approach for the survey level and then switch to a deductive model at the mitigation level unless hypotheses are changed. If an inductive approach is utilized, one may not deductively test those hypotheses generated, as the data from the research universe will then be utilized to test the premises generated inductively from the same data. This is logically inconsistent. One cannot use the same data to test a hypotheses which was used to generate that hypothesis. Testing of a hypothesis involves exposing it to a situation that can show it to be false (Brim and Spain 1974:7). Only if the hypothesis survives a well-designed atempt to falsify it can the researcher be justified in having increased confidence in using it. If one uses the same data universe to test a hypothesis which was used to generate it, there is no exposure to demonstrating that the hypothesis is false.

In order to use a deductive approach in the mitigation level for testing of hypotheses, we have used an intuitive inductive approach at the survey level. The use of statistically generated inductive approach limits the types of testable hypotheses at later stages. It does not matter where our body of testable hypotheses came from. That is, hypotheses which are "dreamed up" can be tested as well as those which are generated from previous testing. An intuitive approach gives us a broad body of testable hypotheses limited only by our mental set. An intuitive inductive approach will, however, still allow our resulting hypotheses to be exposed to falsification. The basic data which was used to generate hypotheses are drawn from the same research universe, but we are potentially as wrong as we are right in our intuitive model proposed. Thus, what we have attempted to do in earlier work was to gain intuitive _a prior_ knowledge which can still be exposed to rigorous testing and may still be shown to be false.

PHYSICAL ENVIRONMENT

The Prairie Peninsula consists of tall grass upland prairies interrupted by woodlands along river valleys. It extends from its juncture with the western shortgrass prairies through western and northern Missouri, Iowa, southern Minnesota, and into Illinois and western Indiana (Fig. 2). Wright (1968:78-79) adequately summarized the reasons for maintenance of the Prairie Peninsula. Its northeastern border through Minnesota is along the mean position of the Alberta storm track in January (Borchert 1950:Fig. 13), and thus the southern edge of the area of heavy snowfall. The southeastern border through Missouri lies along the mean positon of the winter storm tracks that follow the edge of the moist tropical air mass from the Gulf of Mexico (Borchert 1950:Figs. 13, 14; Bryson 1966:Figs. 21-23), and thus the northern edge of the area of heavy winter rainfall. This wedge is marked by dry continental air from the west which has lost its moisture over the western mountains. In the summer, this wedge of continental air is contracted into the western plains by the northward movement of the moist Gulf air mass (Borchert 1950:Fig. 16; Bryson 1966:Figs. 27-29), but when this contraction does not occur, the dry western air dominates even in the summer, resulting in droughts and higher temperatures in the Prairie Peninsula. Successive drought years can cause destruction of the bordering forest, such as occurred during the 1930's (Albertson and Weaver 1945).

The climate of the reservoir area reflects this overall trend with drier winters and summer high precipitation. The mean summer high precipitation (of 124 mm) occurs in June; mean winter low precipitation (of 39 mm) occurs in December. The most distincitive characteristic is the close correlation between actual precipitation and potential evapotranspiration. Only in early and late summer do values for precipitation approximate that of evapotranspiration. Midsummer precipitation is less and winter precipitation is only somewhat higher than evapotranspiration. This distinctive situation has a considerable effect on the vegetation, soils, and hydrology of the area.

Vegetation

The distinctive vegetation and fauna of the Prairie Peninsula have been described by Dice (1943) as the Illinoian biotic province. Vegetation is characterized as

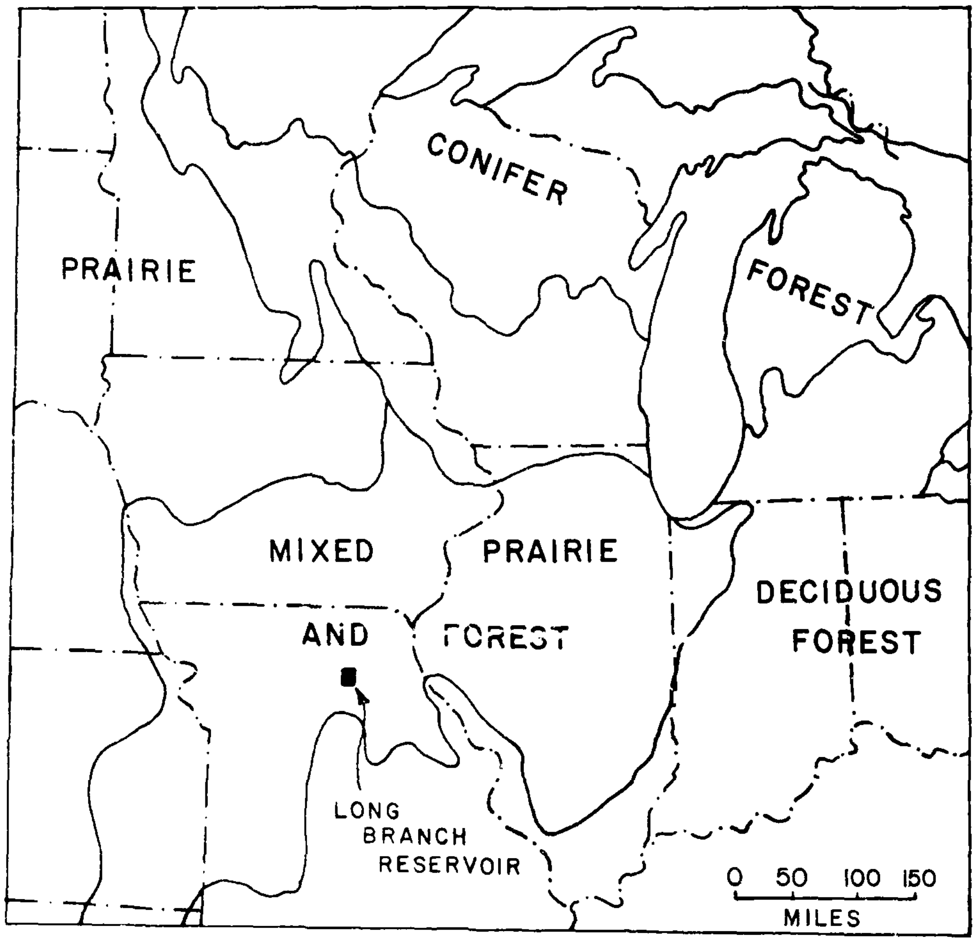


Figure 2. The Prairie Peninsula and relationship to the reservoir (After Wright 1968).

alternating prairie and deciduous forest along river valleys. These are in part a result of the distinctive pattern which occurs in precipitation/evapotranspirative demand.

Circulation patterns are the greatest determinant of precipitation patterns and, as Wright (1968: 28-79) describes, northern Missouri lies within a distinctive circulation pattern. The water balance for the Macon area (Figure 3) indicates a typical pattern for precipitation in northern Missouri - i.e., one which shows an early and late summer high and winter low. Thus, precipitation and evapotranspiration show a high correlation. Soil water loss during the summer (when evapotranspiration exceeds precepitation) requires that soil water be recharged in the fall and winter when precipitation exceeds evapotranspiration.

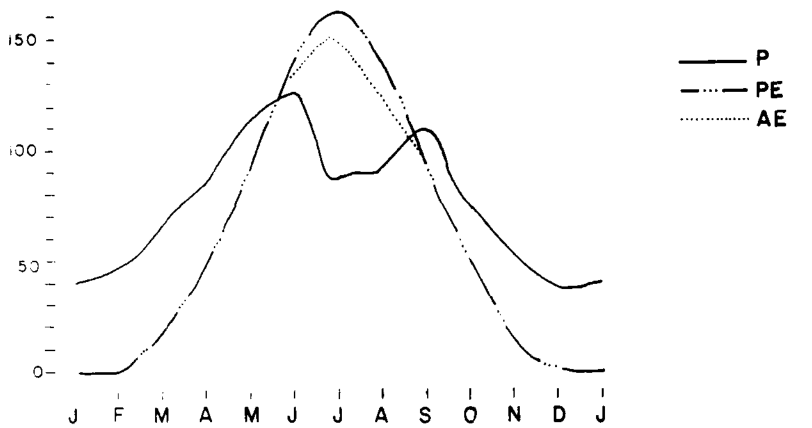
This close correlation between precipitation and evapotranspirative demand carries with it the potential for high stress conditions for vegetative cover. As Wright (1968: 79) noted, the circulation pattern for the Prairie Peninsula results in a higher susceptibility to droughts as well as higher temperatures. Thus, in a drought year when the contraction of the continental air mass does not occur, summer precipitation is lowered and evapotranspirative demand is increased, and soil water recharge to field capacity is not likely to occur (Scrivner et al. 1973: Figs. 1-3). Successive drought years cause deepening of soil moisture depletion without recharge and can result in the destruction of trees (Albertson and Weaver 1945).

While the processes outlined above are taking place in alluvial soils as well as in the uplands, lateral water movement is also occurring. The ground water table is nearer the surface in alluvial areas than on slopes or in the uplands, but the table bends in conforming to relief at a locus of points at which the hydraulic pressure is equal to atmospheric pressure (Terminology Committee 1965). Because the water table has relief, a gradient tending to produce water movement is established. Thus some soil moisture recharge is afforded by this lateral movement. This, combined with the initial surficial closeness of the water table, affords a higher available moisture in alluvial settings.

Parent materials likewise have a major effect on types of vegetation. Two major soil textures are recognized in upland soils in the area - silt loams and loams. These are a result mainly of parent material, two kinds being recognized - loess and glacial till.

MACON, MISSOURI

THORNTHWAITE WATER BALANCE



MACON

LATITUDE	LONGITUDE	ELEVATION	YEARS OF RECORD TEMPERATURE	YEARS OF RECORD PRECIPITATION
39° 45' N	92° 28' W	266 M	32	1878 - 1930

	J	F	M	A	M	J	J	A	S	O	N	D	Y
PE	0	0	16	48	89	133	159	143	95	51	14	0	748
P	40	46	67	85	112	124	86	90	109	76	53	39	927
ST	348	394	300	300	300	291	228	191	205	230	269	308	
AE	0	0	16	48	89	133	149	127	95	51	14	0	722
D	0	0	0	0	0	0	10	16	0	0	0	0	26
S	0	0	94/51	37	23	0	0	0	0	0	0	0	205

PE - Potential Evapotranspiration
P - Precipitation
ST - Soil Moisture
AE - Actual Evapotranspiration
D - Water Deficit
S - Water Surplus

Figure 3. Thornthwaite water balance, Macon, Missouri.

Loess (the site loam) is parent material for two upland soils - Putnam and Chariton. Both soils have clay subsoils (i.e., they have dense argillic horizons). Although both have high available water storage capacities (five to six inches of usuable water at field capacity), this is not to be confused with the total amount of water since clay subsoils often hold sizable amounts of water so strongly that it is unusable to most plants. The main characteristic of these soils, however, is that the permeability of water is very slow and aeration quality is poor. Restricted aeration and permeability adversely effect tree growth since they have deep broad root systems. Grasses have dense shallow root systems as well as deeper, fine roots and are better adapted to these soils. Tree growth in competition with grasses most often results in stunted scrub growth with shallow root systems that are extremely susceptible to drought conditions. For a fuller discussion of rooting systems, drought performance, and grassland/forest competition, see Weaver (1968).

Glacial till is parent material for three soils in the uplands - Lindley, Keswick, and Shelby. These soils have clay loam subsoils. They are characterized by lower available water storage capacities (3.5 to 4 inches of usable water at field capacity), but the clay loam subsoils have moderate permeability and aeration qualities. Trees with deep root systems are therefore better able to survive on these soils. The higher permeability and lower water table which is characteristic of these slope soils, however, may make the susceptible to droughty conditions.

Thus, trees grow in alluvial bottomlands and dissected slopes. Grasses, however, are better adapted to upland situations in that they possess a different root system, and some grasses have a complex system of rhizomes. Also, in successive drought years, short grasses which make up a small part of the tall grass prairie expand and maintain a vegetative cover.

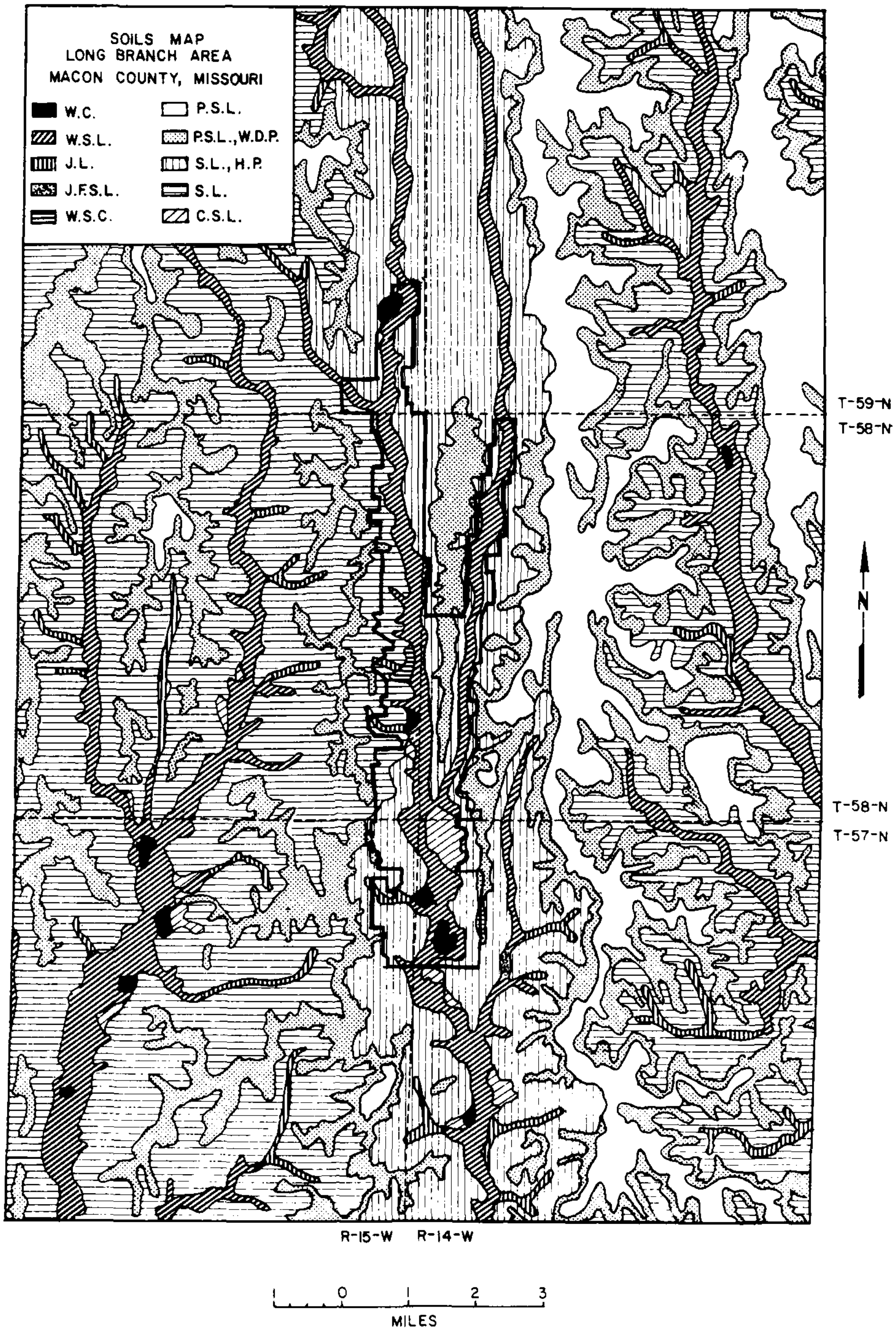
Fauna

Dice (1943) characterized the Illinoian biotic province not only in terms of its distinctive vegetation but terms of its distinctive fauna. Schwartz and Schwartz (1959) provide the following list of fauna present in the area today (as well as those formerly in the area). Those marked by an asterisk (*) are no longer present in the area, their absence being largely the result of overkill by Euro-Americans and habitat loss due to farming practices.

opossum	*Didelphis marsupialis*
shrew (2 species)	(family Soricidae)
bat (11 species)	(family Vespertilionidae)
black-tailed jack rabbit	*Lepus californicus*
Eastern cottontail	*Sylvilagus floridanus*
woodchuck	*Marmota monax*
thirteen-lined ground squirrel	*Citellus tridecemlineatus*
Eastern gray squirrel	*Sciurus carolinensis*
Eastern fox squirrel	*Sciurus niger*
Southern flying squirrel	*Glaucomys volans*
Eastern chipmunk	*Tamias striatus*
Plains pocket gopher	*Geomys bursarius*
beaver	*Castor canadensis*
mouse (eight species)	(family Cricetidae)
muskrat	*Ondatra zibethicus*
coyote	*Canis latrans*
red fox	*Vulpes fulva*
gray fox	*Urocyon cinereoargenteus*
raccoon	*Procyon lotor*
long-tailed weasel	*Mustela frenata*
mink	*Mustela vison*
badger	*Taxidea taxus*
spotted skunk	*Spilogale putorius*
striped skunk	*Mephitis mephitis*
river otter	*Lutra canadensis*
white-tailed deer	*Odocoileus virginianus*
*gray wolf	*Canis lupus*
*puma	*Felis concolor*
*elk	*Cervus canadensis*
*pronghorn antelope	*Antilocapra americana*
*bison	*Bison bison*

Soils

While most aspects of the relationship of external factors to vegetation distribution were discussed in detail, it seems less demanding that a detailed analysis of soil development be included here. Several external factors do, however, impinge upon soil formation. These include organisms (flora and fauna), climate (precipitation and temperature), parent material (physical and chemical aspects), relief (elevation, slope, and depth to water table), and time (Buol, Hole, and McCracken 1973). It should be noted, however, that, as in any system, these factors are highly interrelated. The most important fact here is that there is a close relationship between the distribution of vegetation and soil types. This will become important in our later discussion of vegetation and vegetational change.



W.C. = Wabash Clay
W.S.L = Wabash Silt Loam
J.L = Judson Loam
J.F.S.L = Judson Fine Sandy Loam
W.S.C. = Wabash Silty Clay
P.S.L = Putnam Silt Loam
P.S.L, W.D.P = Putnam Silt Loam, Well-Drained Phase
S.L., H.P. = Shelby Loam, Heavy Phase
S.L. = Shelby Loam
C.S.L. = Chariton Silt Loam

Figure 4. Generalized soils map, Long Branch Lake area (After Krusekopf and Bucher 1913).

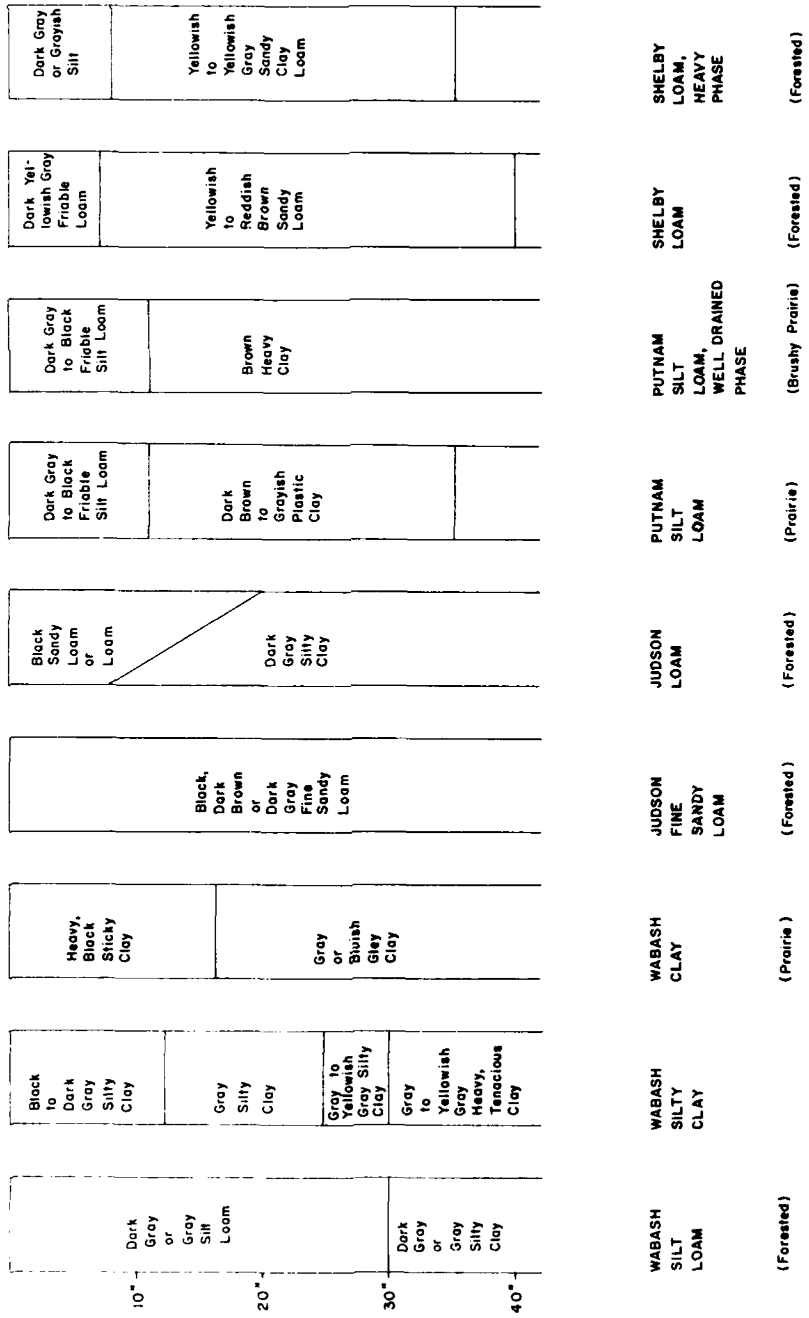


Figure 5. Soil classes (Krusekopf and Bucher 1913).

A generalized soil map of the reservoir area (Fig. 4) in large part reflects the Quaternary history of the area as well as a close correlation with vegetation. Although localized conditions may alter some of the general characteristics of soils, the generalized soils map of Krusekopf and Bucher (1913) is not suficiently detailed to include these and the types listed here represent modal values only.

The most diverse soil types are in alluvial bottomlands. These soils all belong to the Wabash family of soils. These grade imperceptibly into each other and are divided into classes based on modal soil textures (Figure 5).

Soils of the smaller stream valleys tend to be both alluvial and colluvial in nature. They often tend to be higher than soils of the Wabash family and are not often subject to overflow. Like the Wabash family, variation is considerable. These soils belong to the Judson family of soils (Figure 5).

Only one terrace soil is identified in the area -- Chariton silt loam. No terraces exist within the reservoir limits although terraces are found immediately south of the reservoir. Thus, we have no verification of Krusekopf and Bucher's identification, nor do we have any information on terrace age or formation. The area just below the juncture of the East Fork and Long Branch identified as Chariton silt loam on the map is not a terrace but rather an area of gently sloping loess-covered glacial till. It does not fit well with the general description of Chariton silt loam as supplied by Krusekopf and Bucher (1913). It appears rather to have characteristics of both Marion and Hatton soils as described by Scrivner et al. (1966). The top of the upland slopes have deeper loess deposits and have most of the general characteristics of mollisols, and appear to have originally been covered with prairie grasses. As one approaches the bottomlands, however, a transition to alfisols develop. It thus appears that the original vegetation consisted of a transition through scrub forest to forested conditions near the border of the bottomlands.

Two upland soils are identified by Krusekopf and Bucher (1913), and each soil has two phases. These soils are related predominatly to the parent material and the vegetation which each supported. Putnam soils are on flatter relief where erosion has failed to remove loessial deposits. Vegetation originally consisted of prairie on Putnam silt loam and scrub oak on Putnam silt loam, well-drained phase. Shelby loam and its heavy phase occur in area of steeper relief where glacial till is exposed. Vegetation originally consisted of forest -- largely oak-hickory forest.

Geology

Most of northern Missouri belongs to what Branson (1944:250-316) refers to as the Old Plains Modified by Glaciation. The Pleistocene history of the area has had a profound effect not only on general topography but on soils, vegetation, and general availability of specific resources.

Two major glacial advances covered most of northern Missouri -- the Nebraskan and Kansan. These are recognizable by the two types of till which blanket nearly all of northern Missouri. These two tills are generally difficult if not impossible to distinguish based on lithology (Howe and Koenig 1961:133), but due to their depositional history it is not difficult to differentiate them in the reservoir area.

At the dam axis, weathered and oxidized Nebraskan till lies directly on an eroded bouldery limestone formation. On the eastern dam axis the till grades upward into the lower B-horizon (B3) of an Aftonian soil. The most important potential resource in the Nebraskan till is a band of sand, gravel, and cobbles some six to twelve inches below the upper limit of the deposit. This band is about four inches thick and appears consistently as a sheet deposit throughout the reservoir area.

On the eastern dam axis above the latter is an Aftonian paleosol, brick red in color. This represents an upper B-horizon (B2) of an Aftonian soil. On the western dam axis, however, the Aftonian soil is absent, but at the same level is a band of silt and clay-sized particles about 38 centimeters thick. This deposit appears to have been deposited in quiet water -- i.e., it represents a ponding process. This appears to be a highly localized condition and does not extend any great distance to the north. It is interesting that no deposits of Aftonian age have previously been identified in the state. Nebraskan till at the dam axis is about 25 to 30 feet thick.

Above the Aftonian paleosol or Aftonian deposits, there is leached and oxidized Kansan till. Sand and gravel marking the base of the Kansan till have not yet been noted in any part of the reservoir area. In general, Kansan till is relatively stone-free. Depth of the till at the dam axis is only about 15 feet, but the original depth cannot be determined here since post-Kansan erosion is severe. Todd (1893:43) notes that near Bevier the Pleistocene deposits total 106 feet, thus perhaps making Kansas till somewhat greater in depth than the Nebraskan till.

Loessial deposits of undetermined age blacket large areas where relief is more nearly level -- i.e., east of the reservoir area along the inter-stream divide. Only a few isolated area of loess occur along ridges dividing streams within drainages. The more rolling to hilly topography in the Chariton system illustrates the severity of erosion and has left few areas which are level enough to have preserved loessial deposits.

Post-Kansan erosion has exposed the underlying Pennsylvanian bedrock. The formations exposed in the reservoir area belong to the Desmoinesian series, Marmaton group, Fort Scott subgroup. These consist of cyclical deposits of limestone, sandstone, shale, coal, and clay. The most important aspect of potential resources in these formations is that the four limestone members in the reservoir area contain no chert. This is true in general of most of the limestone in the Pennsylvanian system outcropping in the Chariton drainage.

Exposures of these formations do not occur evenly throughout the reservoir area and are found only when (1) lateral stream movement has cut into slopes along the river valley, thereby creating relatively steep slopes. Only those members more resistant to weathering (e.g., limestone and sandstone) are present; (2) vertical cutting by seasonal streams has exposed the more erosion-resistant members along slopes along river valleys; (3) the river itself cuts down to uneroded members in the river valley. This creates available lithic resources not only in the vicinity of the exposure itself but also produces a decreasing proportion of that stone type as one moves downstream.

The importance of these lithic types as potential resources, as well as those derived from glacial till, will be discussed in more detail later.

Topography

Two major physiographic divisions are recognized in our study area: the Flat Prairie of northeastern Missouri and the northern Missouri Rolling Prairie (Krusekopf and Bucher 1913:5). The Grand Divide, lying between these two divisions, forms the watershed of the Missouri and

Mississippi rivers. East of the divide the country consists of a smooth to gently rolling plain with a gradual slope to the southeast. Drainages flow to the southeast and subsequently into the Mississippi. Near the Grand Divide, the prairie is almost flat, with streams cutting down to depths from 25 to 100 feet, producing an undulating to gently rolling surface. This smooth to very gently rolling topography is characteristic of the flat prairie region.

West of the Grand Divide the country belongs to the rolling prairie region. Along the eastern border it forms the margin of the Grand Divide, where it is broken and eroded by the numerous and widely branching tributaries of the East Fork of the Chariton River. This region is marked by a rolling surface, long, narrow ridges, and gentle slopes.

Further west along the Chariton River the topography changes to rolling and hilly. The topography is more deeply dissected with deeper and more numerous tributaries. Interstream ridges are narrower, steeper, and shorter. This region is characterized by its steep, hilly topography, and contains few level plains.

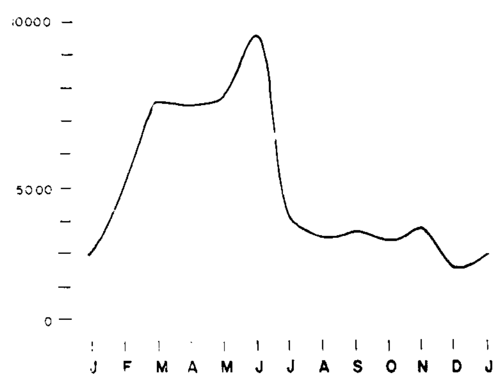
The chief characteristics of the topography of this region are the combination of level plains and slopes. This configuration, due to erosion, has developed on what was originally a wide plain, sloping gently to the south. The remnants of this plain, which comprise the flat prairie and minor plateaus, are steadily being encroached upon by the streams.

The East Fork of the Chariton is the furthest east stream which flows into the Missouri River. It occupies a narrow valley with abrupt slopes, sharply incised by narrow V-shaped ravines. The depression of its valley ranges from 120 to 160 feet below the general plain level. The width of the East Fork bottoms averages about one-half mile, in which the channel meanders from side to side, though it more generally approaches the eastern bluff (Gordon 1893:8). The average fall of the stream is slightly more than four feet per mile. The river, however, meanders considerably so as to nearly double the total river miles. This nearly halves the gradient, creating a relatively slow-moving river. This meander pattern creates bottoms which are diversified by small crescent-shaped ponds and bayous. The characteristic feature of all major streams in north central Missouri is that they flow due south. Except for the larger creeks, the streams have no perennial source of supply and are dry except during rainy seasons.

Hydrology

As precipitation is characterized by extremes, runoff and percolation are also characterized by extremes. The periodicity of stream discharge closely corresponds with the values of precipitation/evapotranspirative demand and soil moisture recharge. Thus, periods of flooding are most likely to occur in late spring and early summer with most of the recorded major floods occurring in June. No runoff records were available in the vicinity of the reservoir. The values in Figure 6 were derived by adjusting the discharges of Medicine Creek near Galt, Missouri, by direct drainage area ratio to Long Branch Reservoir (COE, Design Memorandum No. 1).

AVERAGE MONTHLY RUNOFF
(in acre-feet)



YEARS OF RECORD: 1922 - 1966

	MAXIMUM	MINIMUM	AVERAGE
J	10,876	0.8	1957
F	16,446	14	3704
M	22,862	71	6446
A	27,266	56	6483
M	26,848	71	6630
J	72,291	90	8456
J	25,576	18	2958
A	29,534	6	2326
S	30,206	28	2606
O	12,388	26	2380
N	32,055	38	2752
D	11,366	29	1540
Y	127,120	3,186	46,019

Figure 6. Mean monthly runoff (COE, Design Memorandum No. 1).

RESOURCE MODELS

Subsistence-settlement models are concerned with man-environment relationships. This implies a thorough understanding of the environment of the area. Thus, an available resource model is a prime necessity in understanding man's utilization of that environment. Such a model includes knowledge of a wide variety of food resources and technological resources (the item most often recovered on sites). No matter how diversified the economy, a knowledge of potential resources is crucial to any understanding of adaptation.

Early Euro-American Settlement Phytogeographic Model

There are four main sources on vegetation for the area: records of the General Land Office Surveys; Gordon's (1893: 11-12) observations on vegetation of the area as part of a geological survey of the area; Krusekopf and Bucher's (1913: 17-28) description of vegetation and its relationship to soils; and observations made on vegetation when the initial survey was conducted. Additional information on vegetational communities in the state is drawn heavily from King et al. (1949).

By far the most important of these data are the records of the General Land Office Surveys for, as Kay (1975:15) points out, their utility is that quantitative as well as qualitative models of vegetation can be made for the early 19th century. The use of General Land Office Surveys for forest reconstruction among biologists is certainly not a new one (see Bourdo 1956). Among archeologists this method is becoming increasingly common as well (Zawacki and Hausfater 1969; McMillan 1971; Lewis 1974; Kay 1975; and Roper 1975).

Seven vegetational communities were defined using the field notes for the northern two townships (Figure 7). These communities were based only on those descriptions, and the forest types were named based on the descending order of dominance (Whittaker 1970:40-47). No descritpions or accounts of vegetational communities were consulted prior to constructing this vegetational model in the hope that this would not add an uncontrolled bias into our data. The communities outlined were based only on the General Land Office Surveys, and community structure as observed in the field while on survey. Community structures as previously described in Missouri were then consulted in order to add additional data. The subsequent vegetation model is presented in Figure 8.

LONG BRANCH AREA
MOST FREQUENTLY REPORTED TREES

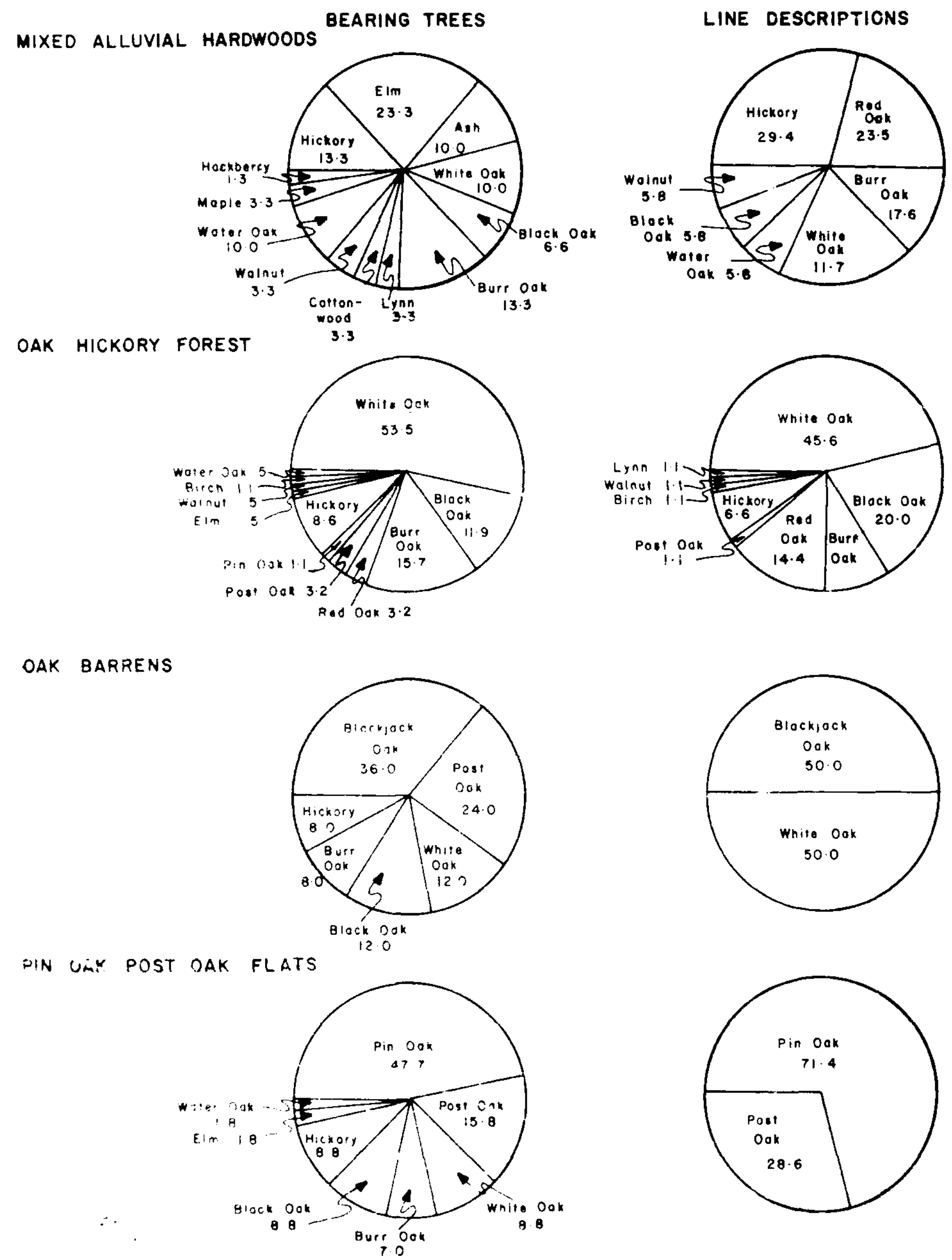


Figure 7. Pie diagrams of tree species, northern two townships. Long Branch Lake area.

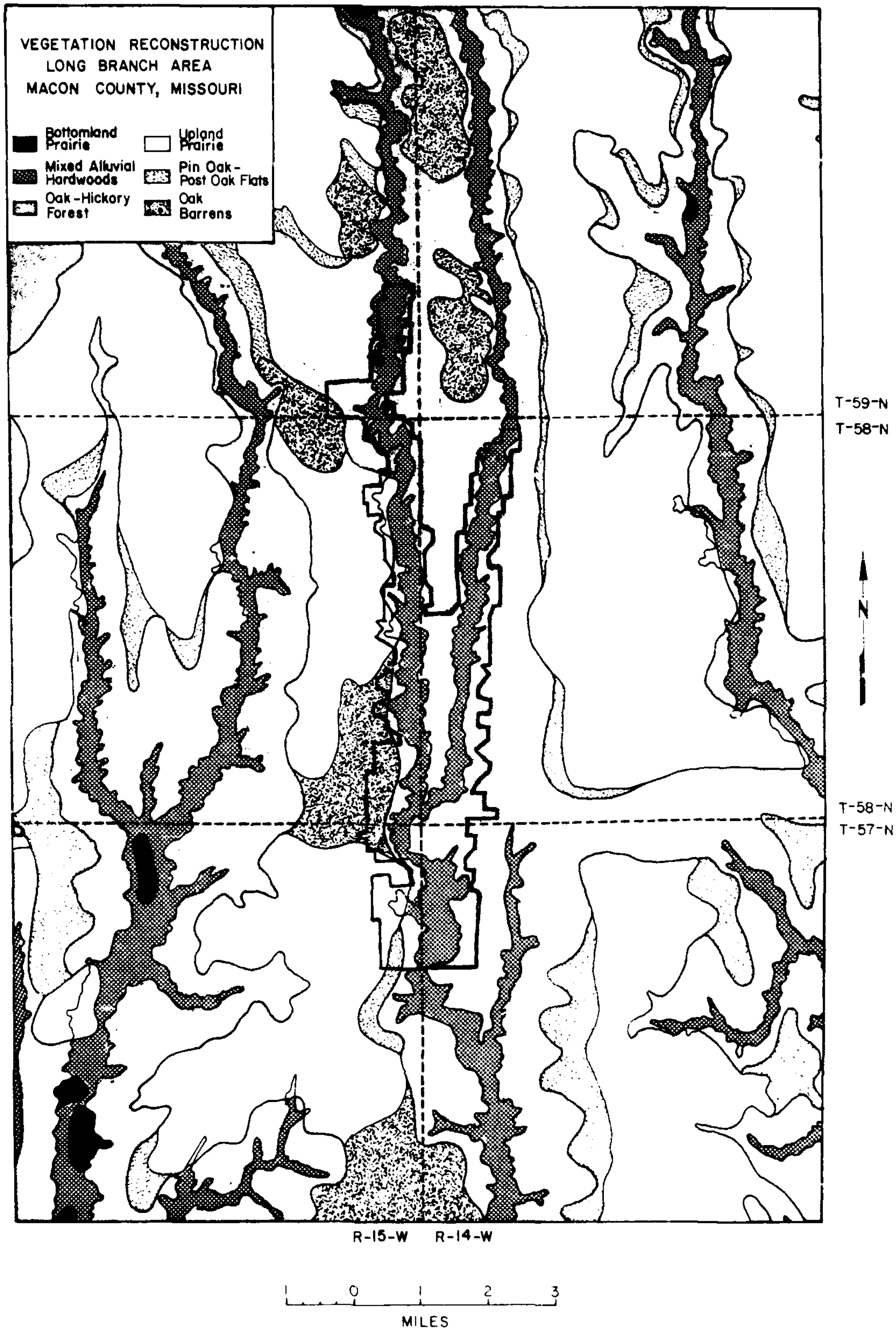


Figure 8. Vegetation reconstruction, Long Branch Lake area.

Two major grassland types were recognized in the General Land Office Survey field notes. These communities comprise approximately 40% of the total area within the six townships. Since neither of these supported substantial arboreal components, most of the information on these communities comes from pre-existing data on similar vegetation from Missouri. These communities no longer exist in an unaltered state in the reservoir area. Almost all of these areas are presently under intensive cultivation and those small areas which do still exist have been highly altered by the introduction of non-native and introduced weeds. No study of these communities as they exist today would be meaningful in a study directed toward understanding pre-Euro-American biotic communities.

Upland prairie - No studies of grasslands in the immediate area of the reservoir could be located. Studies in northwest Missouri and western Iowa (Weaver 1968) as well as work in all of northern Missouri (Kucera 1961) list the following grass species. These are adopted from Weaver (1968:32-33).

LOWLAND GRASSES	UPLAND GRASSES
Big bluestem (*Andropogon gerardi*)	Little bluestem (*Andropogon scoparius*)
Indian grass (*Sorghastrum nutrans*)	Needlegrass (*Stipa spartea*)
Prairie cordgrass (*Spartina pectinata*)	Prairie dropseed (*Sporobolus heterolepsis*)
Switchgrass (*Panicum virgatum*)	Junegrass (*Koeleria cristata*)
Canada wild-rye (*Elymus canadensis*)	Side-oats grama (*Bouteloua curtipendula*)

Sample quadrants in the prairies of western Iowa (Weaver 1968:55) show that hillcrests are heavily dominated by little bluestem prairies. This gradually decreases in dominance downslope until slopes show a dominance of big bluestem prairies.

It, therefore, seems probable that most of the more level prairie areas east of the reservoir were once predominantly little bluestem prairies with big bluestem prairies along lower areas such as the upper reaches of intermittent streams. The more rolling areas in the reservoir area and to the west were probably largely big bluestem prairies with small areas of little bluestems along inter-stream divides.

Bottomland prairie - Wet prairies occur in areas where water stands for a considerable part of the year on the lowest settings on the floodplain. Unfortunately, we have little information on community structure. Kucera (1961:226) notes only that bluejoint (Calamagrostis canadensis) and the common reed (Phagmites communis var. Berlandieri) are not widely distributed and occur only in such settings of northern Missouri.

Sloughs, ox-bows, and swamps make up a small percentage of the bottomlands and have been omitted from the vegetation map in Figure 8. All streams in northern Missouri are, however, highly diversified by these. None exhibit major arboreal components, but some exhibit fairly dense vegetation. Although most of these have been drained, a large number are still present in the Long Branch area. At the time of the survey, they constituted less than 5% of the total bottomlands along the main stream of the rivers to as high as 25% of the total bottomlands near the juncture of the two rivers (based on aerial photographs).

A study of marsh areas on the Chariton River (Luker 1972) recorded the following plants:

+*American lotus (Nelumbo lutea)
*Arrowheads (Sagittaria spp.)
+*Bull rushes (Scirpus spp.)
Bur-reed (Sparganium earycarpum)
Buttonbrush (Cephalanthus occidentalis)
+Cattails (Typha spp.)
Cocklebur (Xanthium sp.)
Cordgrass (Spartina sp.)
Dogwoods (Cornus sp.)
+Knotweeds (Polygonum spp.)
Pondweeds (Potamogeton spp.)
Rice cutgrass (Leersia oryzoides)
Sedges (Carex spp.)
Slough grass (Beckmannia syzigachne)
Spike Rush (Eleocharis smallii)
Southern Blue Flag (Iris virginica)
+Swamp Dock (Rumex verticillatus)
Willows (Salix spp.)

A surprising number of these plants are edible. Those marked by a plus sign (+) are available in spring, and those marked by an asterisk (*) are available in autumn. It is probably that few, if any, true marsh areas have existed in the reservoir area, except in the very latest stages of filling of old channels. Thus, they probably constituted a very small minority of the standing water.

Sloughs and ox-bow lakes make up the bulk of the backwater areas. Crawford (1976:10), in a study of a natural ox-bow lake on the Chariton River, noted that aquatic plants in the pond were conspicuously lacking. The only higher plants found growing in the water were button bushes (Cephalanthus occidentalis), and smartweed (Polygonum sp.) which were scattered around the shallow shoreline. This, in general appears to be true for backwater areas in the reservoir area.

Arboreal communities constitute approximately 60% of the total area of the vegetation reconstruction. Forest types were defined largely on the basis of the field notes of the northern two townships and were classified on the basis of dominant species composition. The differences between these types are not dramatic since oak species make up the dominant species in all of these types. Indeed, intra-type composition may be as great or greater than inter-type. These differences occur largely due to changes in locality, elevation, soil type, exposure, and topography. These are, however, difficult if not impossible to define based on the General Land Office Survey notes. For this reason, we will not attempt to define them as separate types but will include them under the descriptions of each type.

Oak/Oak-Hickory - This forest type covers the largest percentage of the total forested area (some 60% of forested area and some 30 to 35% of the total area). Oak-hickory forest, indeed, is the predominant type throughout Missouri. It is one of the more diverse communities for two main reasons: (1) Dominant oak species fluctuate widely for the reasons cited above for intra-community variation. (2) In addition, gradual changes in dominant structure are often too gradual to be easily noticed. Since oak species are found in large numbers in most forest types, small communities of different composition are lumped together into greater units, thereby concealing the nature of those small units. It is for the latter reason that this forest type is labeled oak/oak-hickory.

White oak makes up more than half of the total bearing trees within this type while constituting only slightly less than half in the line descriptions. This is somewhat deceptive in that such a community would rarely be found. If one were to walk these upland areas, it becomes immediately apparent that the area is not as uniform in structure as our model portrays. This is in fact the result of averaging of smaller communities. Two polar extremes may be recognized: white oak communites and mixed oak-hickory communities. White oak stands occupy those parts of the uplands which are more nearly level, have deeper soil profiles, and yet are not level enough to have preserved loessial deposits. These white oak stands vary from almost totally white oak (as high 65% white oak and 10 to 15% hickory) and grade laterally into a mixed oak-hickory type. Undergrowth is sparse, sometimes consisting only of grasses and mosses.

Mixed oak-hickory stands are quite variable in compositon. Dominant species belong to the "black oak" group - black oak, red oak, and post oak as well as hickory. White oak, although present, does not occur in the frequencies of the other oak species. This group generally occupies the more rugged terrain or where loess deposits of some depth are preserved. Differences in the composition of this type by slope aspect can be noted, although these differences were not well documented in the field. Difference in undergrowth are also great.

Both of these groups are combined for several reasons: (1) Largely white oak stands are not common (probably less that 25% of the total oak/oak-hickory stands and are thus probably more justifiably included in the oak-hickory type. (2) Groups grade laterally into each other and are generally fairly small. (3) Differentiation of such small communities from the General Land Office Survey records is impossible. To make a distinction would be extremely time-consuming and would lead to considerable inaccuracies. In addition, such a distinction would unnecessarily over-complicate an already complex model.

This forest type is of considerable importance in any consideration of economic potential. Ninety-eight percent of both bearing and line description trees are nut-producing trees. Hickory and walnut, however, are the only trees which produce nuts which do not need considerable further processing. These constitute 10% of the trees described on the line.

<u>Mixed alluvial hardwoods</u> - This forest type is the second largest in total area, covering some 15 to 20% of the forested area and some 8 to 9% of the total area. This forest type is the most diverse of all the communities, consisting of a very large number of small communities. The major differences in community structure, however, occur with elevation and, consequently, the amount of available moisture near the surface. There are also differences which occur through successional history.

Succession does not play an extremely important part in the structure of bottomland forests since the river is not actively creating new land at any appreciable rate. Stream banks tend to be relatively stable with the exception of sharp bends in meanders. Bottomlands are diversified by ox-bow lakes and old stream channels. These are not, however, rapidly filled and constitute the majority of new ground. The gradient of the river is low enough that the river deposits little sediment, and little new sediment is deposited on the floodplain even in flood. No sand or gravel bars are now created by overbank flow and these seldom appear on the interior curves of meander loops.

Where new ground is created (as long as the elevation is not low enough to allow standing water for most of the year) general successional history is rather clear. Willow, river birch, and cottonwood are often established very quickly. These fast growing hardwoods are highly competitive on new ground. Elm, maple, and ash then slowly replace the latter. Oak and hickory are the last to enter in drier areas and replace the preceding as dominants. The resulting community will then appear as oak, elm, ash, maple and hickory. Thus the term, "mixed alluvial hardwoods".

Communities developing where water stands for several weeks of the year follow much the same successional history with willow and cottonwoods appearing early. These are then followed by elm and maple. Maple often makes up as great as 75 to 80% of the trees in such areas.

No areas in the reservoir were observed where water stood for several months of the year, although the General Land Office Survey notes for T59N, R14W the occurence of bur oak-swamp white oak stands along the Long Branch which were in standing water.

This forest type also has considerable economic potential. Fifty-eight percent of the bearing trees and all of the line trees are nut-producing trees. Walnut and hickory make up 17% of the bearing trees and 35% of the trees described on the line. The main difference between this type and the preceding type is the greater occurrence of economically important trees in the preceding type.

<u>Blackjack oak-post oak barrens</u> - This forest type (as well as the next) are both marginal upland types; differences between the two are largely in kind rather than degree. The blackjack oak-post oak barrens are largely confined to steep, narrow, inter-stream divides, only occasionally being found as outlier areas near prairie areas in steeper topography. These areas are dominated by true scrub growth and have much the same appearance as what is referred to as "second growth". Growth is generally bushy with leaves covering the entire area above ground. Trees

are often widely spaced and low, seldom exceeding eight to ten feet. Blackjack oak makes up about 40% of the trees. These areas are extremely susceptible to drought. This forest type makes up only 4 to 5% of the area.

All of the trees used as bearing trees and those described on the line are nut-producing trees. Only 8% of the trees used as bearing trees and none of those on the line are hickory. The characteristics of the type (stunted and dispersed with periodicity of nut production lower) make it considerably less important in economic potential than the preceding forest types.

Pin oak-post oak flats - This forest type also represented a marginal upland forest type, which is confined to upland settings which are more gently rolling to level. It forms a transititionary state from true prairie to oak-hickory forest. As it undergoes that transition, the vegetation cover changes from scrub heavily mixed with shrub-growth, to true forest. The width of this transition zone changes dramatically with topography, available moisture, and other controlling factors. This forest type makes up about 8 to 10% of the area.

Ninety-eight percent of the bearing trees and all of the trees described on the line are nut-producing trees. Only 9% of the bearing trees and none of the trees described on the line are hickory. Again, the characteristics of the type make it considerably less important in economic potential than oak-hickory and mixed alluvial hardwood forest types.

Vegetational Change

Wood (1976) has noted that many of these General Land Office surveys were conducted during a time (the Neo-Boreal) in which temperature and precipitation deviated significantly from temperature and precipitation patterns today (i.e., they were cooler and wetter). This may seem initially to be a disadvantage in the use of such reconstructions. Rather, the reverse is true. Temperature and precipitation have fluctuated considerably since post-glacial time. Thus, a vegetation reconstruction from the end of the Neo-Boreal period permits comparisons with later observations on vegetational structure and the effects of warmer and drier conditions which have prevailed since the end of the Neo-Boreal.

From 1868 through 1967, five periods of drought greater than three years in succession are recognized (Tomanek and Hulett 1970:203). These occured from 1868-1873; 1879-1884; 1910-1914; 1933-1939; and 1952-1956. Observations on vegetation postdating those of the General Land Office surveys were made in the reservoir area by Gordon while conducting a geological survey in 1891; by Krusekopf and Bucher (1913:7-28) while conducting a soil survey in 1911; and during 1974-1975 while archeological survey work was being done in the reservoir. Gordon visited the area only seven years after a period of twelve drought years out of seventeen. Krusekopf and Bucher visited the area 26 years after that period and at the beginning of the next drought cycle. Our visit to the reservoir area was 19 to 20 years after the last five-year drought cycle of 1952-1956 and at the beginning of another drought.

These provide four generalized or more highly quantitative observation on vegetation through time. Thus, we have several observations on the correlation between climate, relief, and vegetation at several different states within the system. If we know a single state of the system and all the variables which comprise the system (even if only in a somewhat generalized fashion) we should be able to predict the state of the system at any other time. Unfortunately, we are not able at this time to quantify all of the variables which constitute the system. However, if we examine the correlation between variables (as we understand them) and multiple observations on the state of the system, then we have a highly dynamic tool for predicting the state of the system at any other time.

Several points should be made about the vegetation reconstruction of the General Land Office surveys before going on. (1) Note the existence of large areas of pin oak and post oak flats. (2) The oak-hickory forest along the slopes is domintated by white oak, black oak, bur oak, and hickory. (3) Surveyors seldom needed more than one-half chain to reach a tree in excess of 12 inches in diameter in the oak-hickory forest. Trees in excess of 24 inches are common.

Gordon was the next person to note the vegetation of the area after the General Land Office surveys. He offers us a considerably different picture in his description. He stated that the timber was largely confined to the slopes and valleys along the streams. Along the East Fork, the slopes are generally covered with a profuse though stunted growth of oak of several species - shingle oak predominating. The bottoms of the Middle Fork and Chariton River were occupied by a characteristic growth of elms, oaks, and other trees. In the case of the latter stream, the timber is mostly confined to the western bank in places but it occupied nearly the entire bottom in other places. The steeper slopes of the secondary streams were likewise covered with a varying growth of timber while that on the gentler slopes has been largely removed for cultivation (Gordon 1893:11-12). Gordon went on to list the trees in the area and notes that both pin oak and post oak are comparatively rare. These differences most certainly are not the effect of clearing for cultivation, as he noted in the above passage, since only the more gentle (or very upper) slopes were cleared for cultivation. In regard to the bottomlands, he stated that the wide alluvial bottoms of the Chariton River furnished many acres of rich soil which were yet unavailable on account of periodic overflow (Gordon 1893:11). The vegetation as described by Gordon therefore must have been essentially as it would have appeared free from human interference.

One of the most apparent differences between the vegetation of the General Land Office surveys and Gordon's time is the rare occurrence of pin oak and post oak noted by Gordon. In the vegetation reconstruction, pin oak and post oak flats make up about 20 to 25% of the forested area. The farming practices Gordon described would certainly have removed some of this forest, but farming practices tend to be somewhat more selective in pasturage versus cultivation policies, and is thus doubtful that this would have been a principle cause in the near disappearance of pin oak and post oak trees. Extremely high death rates in trees during drought periods in marginal areas seem a more plausible explanation.

Gordon's description of the vegetation as profuse though stunted seems incongruous with diameters and distance to bearing trees in the General Land Office survey notes and present observations. If, however, what Gordon noted was indeed tree death in the oak-hickory forest during previous periods of drought, secondary growth or transitionary scrub hardwoods would have had a stunted appearance. If these were indeed scrub hardwoods, it could also explain the differences which occurred in species compostion (i.e., replacement of white oak and black oak by shingle oak). The bottomland forests seem little affected as Gordon's descriptions from the General Land Office survey notes.

Krusekopf and Bucher visited the area in 1911, some 20 years after Gordon. Although not noting as carefully the vegetation of the area, they described the area. In the stream bottoms elm, hickory, walnut, maple, sycamore, and oak predominated, with post and black oak, some hickory, elm and walnut on the uplands (Krusekopf and Bucher 1913:7). Thus, the uplands appear to have recovered somewhat and are closer in species composition to that of the mid-early 1800's. In regard to the transitional area between prairie and forest formerly occupied by pin oak and post oak, Krusekopf and Bucher (1913:21) noted that these areas were generally covered with a scrubby growth of white oak and black oak. This probably represents a regeneration of the oak-hickory forest borders which experienced die-back during drought conditions.

When we visited the reservoir area in 1974-1975, much of the vegetation was still in a largely unaltered form. General composition is included under the discussion of forest types, but a few additional comments are appropriate here. Logging operations were taking place at that time along the lower central ridge and bottomlands, offering an opportunity to examine tree age by counting annual rings. Bottomland stands of timber were highly variable in both composition and age structure. Large trees in excess of 100 years were common. Much the same condition occurred along the lower slopes of hills near the rivers to an elevation of about 30 to 40 feet above the level of the floodplain. Midslope ranges of hills, however, appeared to have an extremely consistent diameter range for trees. Almost without exception, these trees were about one foot in diameter. An examination of the age of these trees indicates that most are about 85 to 90 years old. These appear to have begun growth shortly after the droughts of the late 1800's, and correlate well with the probability of Gordon's stunted growth. Trees of the upper slopes (particularly on the ridge between the East Fork and the Long Branch) are also similar in size, but are seldom more than 30 years old with the notable exception of locust trees. Transitional areas between prairie and forest were still composed of scrub white oak and black oak. Large prairie and brushy prairie areas still exist along this central ridge in the upper reaches of the reservoir area. These areas were tree covered at the time of the General Land Office surveys.

An examination of the soils of the area can be particularly informative in regard to the vegetation of the area, especially when the major division of soils in the upland is based on forest versus natural prairie soils. Vegetation tends to respond relatively quickly to climatic changes while soils change much more slowly. Although soils may change horizonation in as little as one hundred years (Scrivner, personal communication, 1974), the rate at which such changes occur depends largely upon the degree of water movement, as the latter controls rates of leaching, illuviation, and flocculation (the major agencies responsible for changes in horizonation). As precipitation has decreased since the end of the Neo-Boreal, and as Krusekopf and Bucher's soil survey was conducted in 1911 (only 50 to 60 years after the end of the Neo-Boreal), it is believed that the soil survey reflects the vegetation of the area prior to the General Land Office surveys. The soil survey thus constitutes a limited set of indirect observables on vegetation within the Neo-Boreal.

A comparison of the soils map (Fig. 4) with the General Land Office vegetation reconstruction (Fig. 8) suggests that several changes in vegetation had occurred. Although prairie areas to the east are not greatly different in size, those along the interstream divides to the west are practically nonexistent on the soils map. There are areas of what were brushy prairie, but they are spotty and much smaller in area. Thus, it would appear that some expansion of the prairie at the expense of oak-hickory forest had taken place by the time of the General Land Office surveys.

Thus, the following appears to be a generalized construct of vegetational change under drought stress conditions. (1) Pin oak and post oak flats and blackjack oak and post oak barrens are particularly unstable under drought conditions. Death rates are high and regeneration of these communities is very slow. In drier climatic cycles, regeneration will probably not occur. (2) Upper slope ranges of oak-hickory forest along interstream divides and along prairie edges also experience severe death losses under somewhat more severe drought conditions. This would result in an expansion of prairie and brushy prairie. Recovery of these areas appears to be fairly rapid if drought cycles are not protacted. In drier climatic cycles, expanded prairies are expected to stabilize along interstream divides and upper slope ranges. (3) Death loss in the oak-hickory forest along midslope ranges appears to occur only under severe and extended drought periods. Death losses need not be heavy and recovery appears to have been rapid and little affected by less extended drought periods. (4) Lower slopes covered by oak-hickory forest and mixed alluvial hardwoods appear to have been essentially unaltered during extended drought conditions.

Technological Resources

Knowledge of the natural resources of the area is important for understanding any subsistence-settlement system for, as Winter (1969:23) pointed out, as activities varied during the seasonal cycle, so did the need for particular types of raw materials for the manufacture of accessories. Likewise, an analysis of raw materials utilized gives us an index of "self-sufficiency". This "self-sufficiency" (or lack of it) carries considerable implications for trade and/or size of seasonal movements. Thus, being able to make comparisons of the use of natural resources from different areas (especially within drainage units) assumes an even greater importance in an ecological analysis.

In the following a discussion of all potential resources is impossible. Bone, antler, and shell have not in general been preserved; lithic resources are most common in all sites.

CHERT

Chert, although one of the most utilized of technological resources, is probably the single scarcest resource in the river valley. There were no observed local chert outcrops in any of the limestone formations exposed in the reservoir area. Chert, likewise, does not constitute a significant portion of the glacial till. A day's search along the river and adjacent secondary streams resulted in the recovery of only two pieces of chert of appreciable size. Neither specimen was of sufficient quality to be workable, as both nodules had numerous heavy fracture planes. Chert appears to be uniformly distributed within the glacial till and may be treated as a constant. Although glacial cherts are present in almost all chert samples, a large portion of the recorded chert appears to have a non-local point of origin. No vertical concentration of chert was noted, although the sheet deposit near the upper part of the Nebraskan till contains a large part of the glacial gravel in the reservoir.

GLACIAL GRAVEL AND COBBLES

Glacial gravel and cobbles are present throughout the reservoir area. They are not, however, in constant proportions in secondary streams or in the river. This is due in large part to the variable amounts of Pennsylvanian rock from exposures along feeder streams and in the river. This variation in material is sufficient to create highly variable lithic resource availability. Thus, while glacial stone is present in relatively constant amounts, it is sometimes masked by the abundance of stone from Pennsylvanian formations.

In order to illustrate the diversity of lithic resource availability and to determine cultural selectivity of lithic "types", a lithic resource model was outlined for the lower half of the reservoir. Lithic samples were taken at non-regular intervals throughout this area. Although it would be more desirable to take samples in a more systematic fashion, these resources are so irregularly distributed that any systemization would be difficult, at best.

A modular representation of the lithic resources in the lower half of the reservoir is provided (Figure 9). Table 1 shows the average percentages of lithic samples in these areas. These represent mean values, as the lines for availability are somewhat arbitrary. Groups grade into each other, especially along the river where lithic material from secondary streams and from exposures in the river are found in slowly decreasing amounts down river.

HEMATITE

Hematite is present in the glacial till, generally as a very minor component. Although no difference in the distribution within the glacial till was noted on the survey, distributional differences are quite possible. Likewise, the amount of culturally altered and unmodified hematite appears to vary between sites, but no work on distributional trends has been attempted.

FLINT HILL SANDSTONE

Flint Hill Sandstone is a dense, fine-grained sandstone which appears to be a channel-fill sandstone. The total thickness of the outcrop is variable. The Flint Hill formation to the south is largely shale ten to twelve feet in thickness. The sandstone is largely confined to about a one square mile area centering near the juncture of the East Fork and the Long Branch. The bulk of the sandstone is a medium hard sandstone, light yellow to brown in color without distinct bedding planes. Occassionally, it appears as a dense metaquartzite.

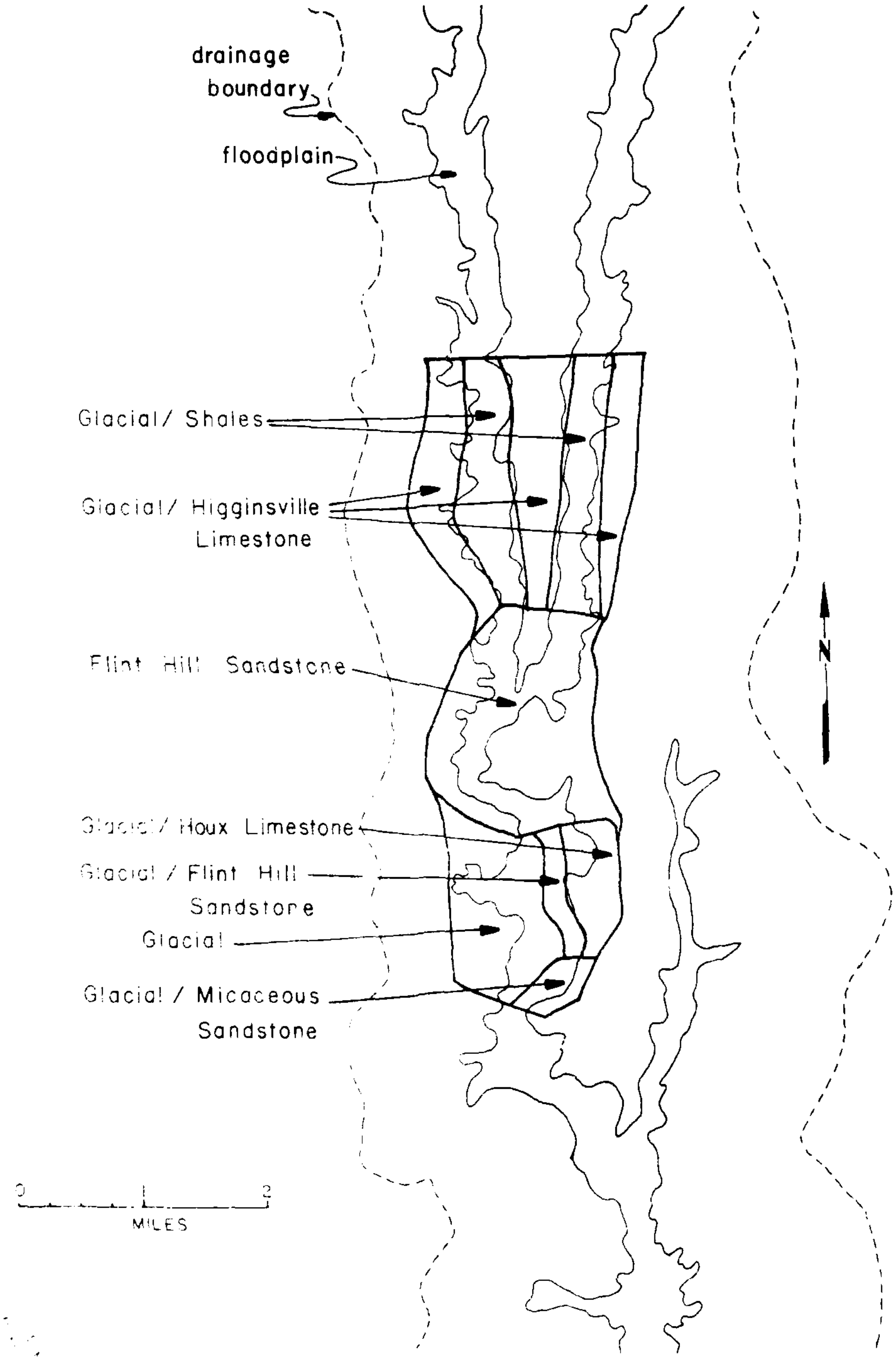


Figure 9. Generalized model, lithic resources areas, Long Branch Lake research area.

TABLE 1

Mean Percentage of Lithic Samples
From Major Resource Areas

	Glacial	Flint Hill Sandstone	Micaceous Sandstone	Limestone	Shales
Glacial/ Shales	83%	--	--	5%	12%
Glacial/ Higginsville Limestone	89%	--	--	9%	2%
Flint Hill Sandstone	16%	83%	--	1%	--
Glacial/ Flint Hill Sandstone	74%	25%	--	1%	--
Glacial/ Houx Limestone	86%	--	--	11%	3%
Glacial	94%	1%	--	4%	1%
Glacial/ Micaceous Sandstone	60%	4%	27%	9%	--

MICACEOUS SANDSTONE

Micaceous sandstone is a soft, medium-grained, slightly friable sandstone which appears in the Little Osage formation. The nature of origin is uncertain, although it would appear to be a channel-fill sandstone. It could not be determined from which member the sandstone originates. Outcrops were not observed, although it appears just above the dam axis and extends for an undetermined distance to the south. The sandstone is soft, light gray to yellowish gray in color, and lacks any observable bedding planes.

HIGGINSVILLE AND HOUX LIMESTONE

Higginsville limestone overlies the Little Osage formation. It is a medium hard, light gray, dense limestone with wavy bedding. It is slightly yellowish in places and weathers to a yellow or deep brown color. Houx limestone is part of the Little Osage formation. It is a medium hard to hard limestone, light to dark gray in color. It is relatively low in iron and weathers to a light to medium gray color.

SHALES

Shales are the most common lithic material in the Pennsylvanian formations in the area. Several shale members appear in the reservoir area. All are soft, thinly bedded, and largely noncalcareous. Color is highly variable.

CLAY

Two types of clay are present in the area. Pleistocene clays are present throughout the reservoir largely as a result of soil horizonation. These are hard brown silty clays with sand inclusions. Pennsylvanian clays also appear in small areas beneath coal seams. These are soft, light gray to gray clay-shales. They are generally earthy and massive. These underclays may reach depths of five to eight feet.

TESTING METHODS AND PROCEDURES

Of the sites to be affected by the reservoir and construction activities, we attempted to include work on sites which would yield maximal information relative to our research design and at the same time work on those sites which would be most heavily impacted by the reservoir. In order to achieve both of these objectives, work was confined to the lower one-half of the reservoir as this was the area to be most heavily impacted. Work on these sites was broken into recollection, testing and excavation.

Sites with planned large excavations were to have excavations to obtain assemblage structure, associations, activity areas, and a feature record. These sites were chosen on the basis of interpreted site functions (all are large seasonal sites or special use sites) with at least one site from each time period which appeared to have a different cultural assemblage. Thus, there was one site which appeared to contain Early Woodland, Middle Woodland, Late Woodland, and Mississippian components. It was possible that the site contained an Archaic component as well. The other sites were also often multicomponent, but there were two sites with major Middle Archaic assemblages and two sites with Late Archaic assemblages. There were at least three sites with Middle Woodland assemblages and at least two sites with Late Woodland assemblqes (Figure 10).

Sites with limited testing included small seasonal sites, transient camps, as well as hunting camps. Again, we attempted to include at least one site with a differing assemblage from each chronological period. Sites were included on the basis that an insufficient amount of information was known about the sites or that a limited comparable sample was desired. Most of these sites were low density sites, and such testing was not expected to yield large amounts of data (Figure 10).

Low density sites falling below the multipurpose pool level were slated for recollection. Due to a variety of circumstances, recollection at all of these sites was not possible. There was no clearing along the Long Branch arm and above Axtel road on the East Fork arm of the reservoir, and recollection would not have been productive. On the west side of the reservoir north of the juncture of the East Fork and Long Branch north to Axtel road, only limited clearing occurred, and sites were still heavily vegetated. In the cleared areas, most of the sites were recollected. Some cleared sites were revisited but no new material was collected, and some sites were already inundated by dam closure.

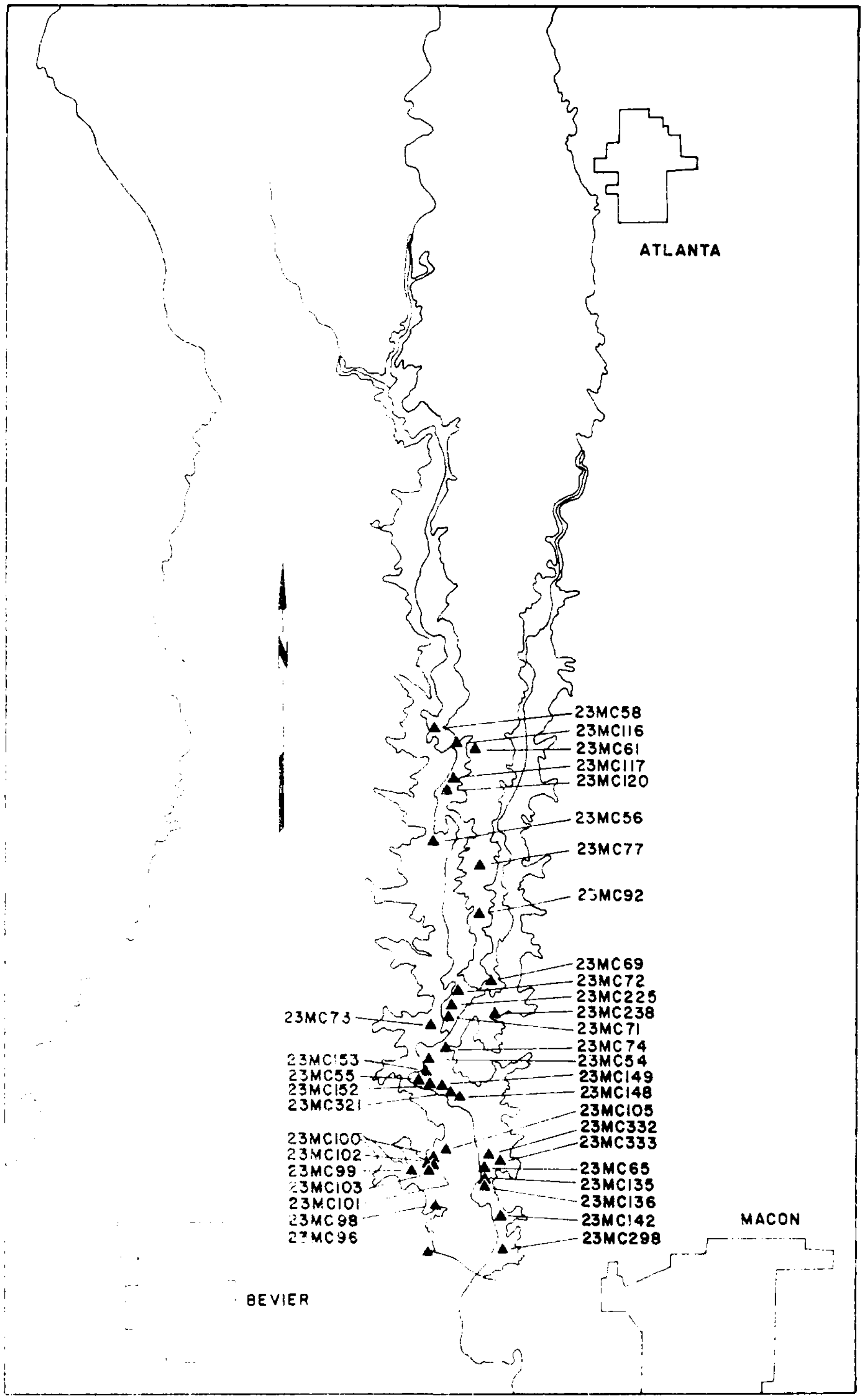


Figure 10. Long Branch Lake and location of sites discussed in the text.

Sampling

The selection of sites was not done by systematic sampling. This was simply not possible. Given that the level of funding for the project was limited, it was necessary to maximize data return. It was thus necessary to select sites which would fill the gaps in our model and adquately test the premises of our model. This was necessary particularly for sites from the first occupations through the Middle Woodland period. We had a somewhat firmer handle on the later periods. As the earlier settlement-subsistence patterns in the area center around problems in the posited fall seasonal sites, these sites were in most need of excavation. Admittedly, this biases our sample somewhat. In order to avoid an obvious insertion of biased data, we attempted to do work on all sites below the multi-purpose pool level and in construction areas. Although the types of data gathered differ, it was hoped that this would lessen our bias. All large seasonal sites and one special use site were excavated. Most small seasonal sites and transient camps were tested, and some small hunting camps were tested. Sites with a lower density of materials were monitored and recollected in an attempt to gather diagnostic materials.

Of the twenty-three sites to be impacted by construction, one had previous excavations on it but was totally destroyed by the summer of 1978 (23MC70). Thirteen of the sites were tested, and one site (23MC131) was recollected only as impacts had not occurred on the site. Impacts to the latter are not necessarily anticipated at this time. Four of the sites in construction areas had already been destroyed (23MC97, 111, 132, and 134), two were heavily disturbed (23MC104 and 23MC106), and one was revisited but no new material was colelcted (23MC119). One site (23MC46) was located in an area where construction was to occur but construction was already complete and it had ony been marginally impacted. As this site lies well above the reservoir level, no excavations were undertaken.

Of the fifty-five sites below the level of the multipurpose pool, excavations were undertaken on seven sites, testing on fourteen, and recollection and monitoring of twelve sites. Five of the sites below multipurpose pool level were slated for recollection but were in areas which had not been cleared (23MC84, 108, 171, 270, and 271). Four sites were revisited, but no new material was collected (23MC156, 158, 159, and 23). Four sites were buried bottomland sites and were not expected to be heavily impacted by the reservoir (23MC326, 329, 330, and 331).

Nine of the sites were inundated after closure of the dam but prior to actual impoundment and could not be revisited (23MC334, 335, 337, 338, 339, 341, 342, 343, and 344).

Sampling on individual sites was dictated by our research goals. Our expressed desire on sites to receive excavations was to obtain evidence of associations, activity areas, and a feature record. It was decided that the most expedient and efficient way to achieve this was through block excavations. Randomly placed squares would yield information on assemblage structure and possible a feature record, but we anticipated that activity areas and association of activity sets could best be determined through the use of block excavations. Block excavations were not randomly placed. Block excavations were undertaken in areas where previous excavations had indicated the denser deposits on the site and, where practical, the greatest depth of deposits. Again, this was an attempt to maximize data return and to help as much as possible in the delineation of stratigraphy. As many of the sites were relatively shallow and multicomponent, we wished to maximize the depth of deposits in order to sort out shallow stratigraphy.

Methods

Methods utilized in excavations on sites varied with the types of data required and the idosyncratic nature of sites. These are described under the excavation descriptions at each site. Several generalizations about field methods may be made, however.

Excavations proceeded in arbitrary levels as no natural stratigraphy was noted in any of the upland sites. Where plowzone deposits were present, these were stripped as a single unit regardless of the depth and arbitrary levels instituted below that point. In general, all materials were passed through one-quarter inch hardware cloth. Materials discovered in situ were recorded horizontally and vertically and bagged separately. For test excavations, only tools were to be plotted in place. Horizontal control was maintained by recording distances from the southeast corners of the squares. Vertical control was maintained by recording below surface depths and then tying the corners of the squares into the site maps. As stratigraphy can be very fine, it was decided that below surface readings were probably more meaningful for interpretive purposes.

Features were treated as autonomous units. Features were mapped in horizontal outlines and were then cross-sectioned and the vertical profiles drawn. Matrix from features, or a sample, was bagged and returned to the laboratory. This material was floated and then screened through one-sixteenth inch hardware cloth for recovery of micro-materials.

In the description of materials from sites, it was difficult to decide what categories would be meaningful. We wished to remove enough idiosyncratic traits to make categories meaningful, and yet preserve enough of these traits so that meaningful diversity, if present, was not eliminated. To that end, categories were constructed which lump data as far as was considered practical and individual artifact attributes are provided in tabular form. Categories were constructed and descriptions provided in narrative form so that comparisons with previously reported materials is facilitated. The rationale behind categories is provided within the category descriptions.

The categories are not meant to be function-specific (e.g. the category "points" is not meant to imply that that was their sole function), but rather are classified by traditional morphological attributes. This was done largely for comparative purposes, so that materials previously classified as "points" are listed in the same way in this report. There are, however, functional implications, since no functional implications would leave us with little to say in regard to site functions and changes in these through time. These will be discussed in later sections.

Categories and artifacts within categories are designated by a familiar category number / artifact letter designation system (cf. Klippel 1968, 1972). Measurements in tables are in millimeters, weight in grams, and asterisks (*) after measurements and weights indicate that the dimension is only a portion of the total. Asterisks only indicate that the item is too fragmentary to determine which dimension is represented, and no measurement is offered. Specific data on highly fragmented tools, debitage, and unmodified stone are not presented. Distributional summaries of materials are also provided.

THE SITES

23MC54

This site was located by Potter (1970). It lies on the left (east) bank of the East Fork approximately 150-200 feet from the original course of the river. The western edge of the site had been truncated by river erosion, indicating that at one time the river flowed along the edge of the site. The site area is separated into three smaller areas by washes. It was difficult to determine the original extent of the site as described by Potter (1970), so that all three of these small hills were included under that site designation. Material distribution did not appear to be discontinuous over this area, particularly along the eastern edge. Slope aspect of all three hills is west. Hill slopes are steep along the western edges; moderate along the northern and sourthern edges. The set of hills is bounded by a small wash to the south and by a large draw to the north. The size of the site is estimated to be approximately 400 feet north- south by 200 feet east-west. The elevation of the site was approximately 775-790 feet m.s.l. Vegetation consisted of grass pasture, and visibility was generally poor over the entire site. Material density appeared to be moderate, and the site appeared to be a relatively poor state of preservation.

Only limited excavations were undertaken as the site appeared to be similar to 23MC55. We wished to obtain a sample of materials for comparison with other sites in the research area. The site lies at he margin of a large area of soil which appears to have developed under prairie conditions and also lies at the edge of the significantly different pattern in subsistence. During the field season three, one-and-one-half meter squares were excavated on the site. These three squares were laid out so that one square would fall in each of the three areas separated by draws, designated as areas A, B, and C (Figure 11). Although it appeared that the entire site area had been plowed, the squares were still excavated in arbitrary ten centimeter levels in order to determine if a detectable plow zone was still present. The plow zone was approximately fifteen centimeters deep across the entire site area. The northern excavation unit proved to be culturally sterile below the plow zone. The other two squares contained sub-plow zone deposits only to a depth of two to five centimeters below the base of the plow zone. The southern two excavations units were excavated to a total depth of 20 centimeters below the surface.

No cultural stratigraphy was noted during the excavations. Most of the deposits were contained within the

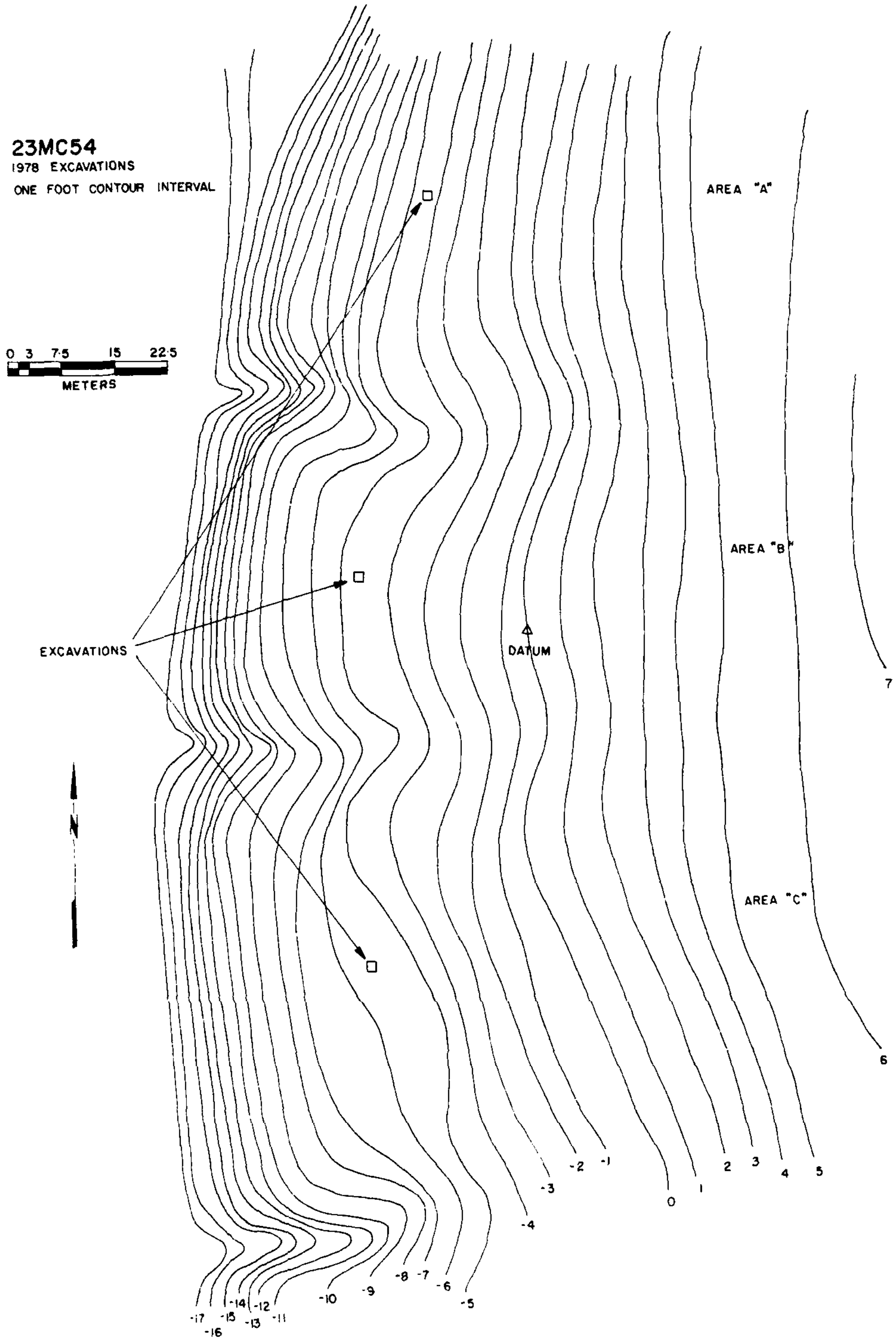


Figure 11. 23MC54. Site Map and Location of Excavations.

plow zone and were highly disturbed. The only physical stratigraphy noted was the result of soil horizonation. An Ap-horizon extended to a depth of approximately fifteen centimeters below the surface across the entire site. A B1-horizon was present only in the sourhern two squares with a toal depth of five centimeters below the plowzone. A B1-horizon was not present in the northern excavation unit. A B2t-horizon extended from the base of the B1 horizon to an undetermined depth.

Description of Materials

Points

Group 33:a Small, Straight-based, Corner-notched Point - 1
(Figure 12,a)

The specimen in this category exhibits a straight base, sharp stem-base juncture, expanding stem, moderate corner notches, abrupt shoulders, excurvate lateral margins, and a bi-convex cross section. The corner notches are moderate to narrow, deep, and were created by the removal of multiple pressure flakes. Final notch flakes originate from the same face. The chipping pattern consists of secondary pressure flaking. Secondary flake scars are small, expanding, and inconsistent in size and distribution. The specimen does not exhibit any resharpening. It would appear that the specimen was produced from a flake blank due to its thinness and to the absence of primary flaking. The material appears to be silicified sediments.

Ground/Pecked Stone

Group 96:a Ground, Pecked, and Battered Stone - 1
(Figure 12,b)

The specimen in this category exhibits one ground face and two pecked faces. Pecking is centered on one face and scattered and diffuse on the other face. No noticeable depression has been created on either face. The degree of force appears to have been fairly light. The specimen exhibits one face which has been ground with grinding present on the more heavily pecked face. Grinding has removed the cortex on the ground surface and contrasts noticeably with the surrounding cortical color. The specimen lacks any noticeable striations. It exhibits battering on both ends and both edges. Battering appears to have been light with edge crushing present. Battered areas are discontinuous and do not extend into each other. The specimen lacks edge shattering and lacks shaping of the cobble prior to utilization.

Hematite

Group 117:a Chipped Hematite - 1 (Figure 12,c)

The specimen in this category consists of a single piece of chipped hematite. The specimen exhibits flakes removed on both surfaces. Flake removal is bifacial-unilateral. It appears that the specimen was in the process of being shaped for a tool, as flake removal is regular. The specimen was subsequently fire-cracked.

Lithic Waste

Group 134 Chert Waste - 81

A total of 71 chert flakes and 10 pieces of chert shatter were recovered from the excavations.

Group 141 Fire-cracked Rock - 605

The specimens in this category exhibit fire cracks or thermal alterations in color. They meet the same criteria as has been presented earlier (Grantham 1977).

Group 142 Unmodified Stone - 156

The material included in this category consists of unmodified glacial materials. They exhibit no intentional or unintentional cultural modification.

Historic

Group 144 Historic - 5

A total of 5 historic items were recovered in the excavation. All historic material comes from the first level of the excavations. Material recovered included three pieces of glass, one piece of iron wire, and one piece of a phonograph record secondarily utilized as a gizzard stone.

TABLE 2

Artifact Attributes and Measurements - 23MC54

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Points						
Small, Straight-based, Corner-notched Point						
33.a	105	31	17	6	3g	
Ground Pecked Stone						
Ground, Pecked, and Battered Stone						
96.a	104	77	69	34	267g	Argillite 1g, 2p, 4b
Hematite						
Chipped Hematite						
117.a	104	42	37	13	41g	Chipped

TABLE 3

23MC54

Distributional Summary

		33	96	117	134 I	134 II	141	142	144
Area A XU 102	L. I	1	1	-	18	3	87	18	1
	L. II	-	-	-	2	1	51	15	-
Area B XU 102	L. I	-	-	1	30	5	332	32	3
	L. II	-	-	-	14	2	109	11	-
Area C XU 102	L. I	-	-	-	7	-	26	80	-
	L. II	-	-	-	2	1	-	-	1

The Site Assemblage: 23MC54

The projectile point in Group 33 does not appear to be common in northeast Missouri. Although a number of specimens throughout the area appear to be somewhat related, seldom are directly related materials encountered. It appears to be similar to a point from 23MC66 (Grantham 1979:300), although the base on this specimen is broader and the stem-base juncture sharper. Somewhat related materials appears to come from Cannon Reservoir (Henning 1961:Cat. ES-3) where they appear to be Late Woodland. They also appear to be related to materials reported by Eichenberger (1956:Fig. 4). They appear to be somewhat related to he type Koster Corner-notched (Perino 1971:100). This type is common in Illinois (Perino 1973:166) and in northeastern Missouri (Eichenberger 1939; Eichenberger 1944:Pl. III; Eichenberger 1956;Fig. 4; Henning 1961:139, 175; and Hunt 1976). If these are related, it would appear that the specimen is Late Woodland. Although a single projectile point is not sufficient to assign a component to the site, it appears probable that a Late Woodland component is present. Most of the sites in the area contain a thin Late Woodland component. It is quite possible that other components are present as well, but an insufficient area was excavated to indicate if this is true.

The ground, pecked, and battered stone in Group 96 indicates that some plant processing probably occurred on the site. Again, due to the small area excavated, we have no good idea of the relative importance of selected subsistence activities. The one piece of chipped hematite (Group 117) has been chipped in a somewhat regular fashion. It may have been in the process of tool-shaping. All of the remainder of the prehistoric materials are waste. No analysis of the chert waste was conducted due to the small sample size. Fire-cracked rock is the result of the use of stone for heat retention and appears most frequently in features. Fire-cracked rock is often dispersed throughout sites, but concentrations of fire-cracked rock in features are most common. There are no apparent concentrations in the test excavations, but it appears that thermally related activities were important on the site.

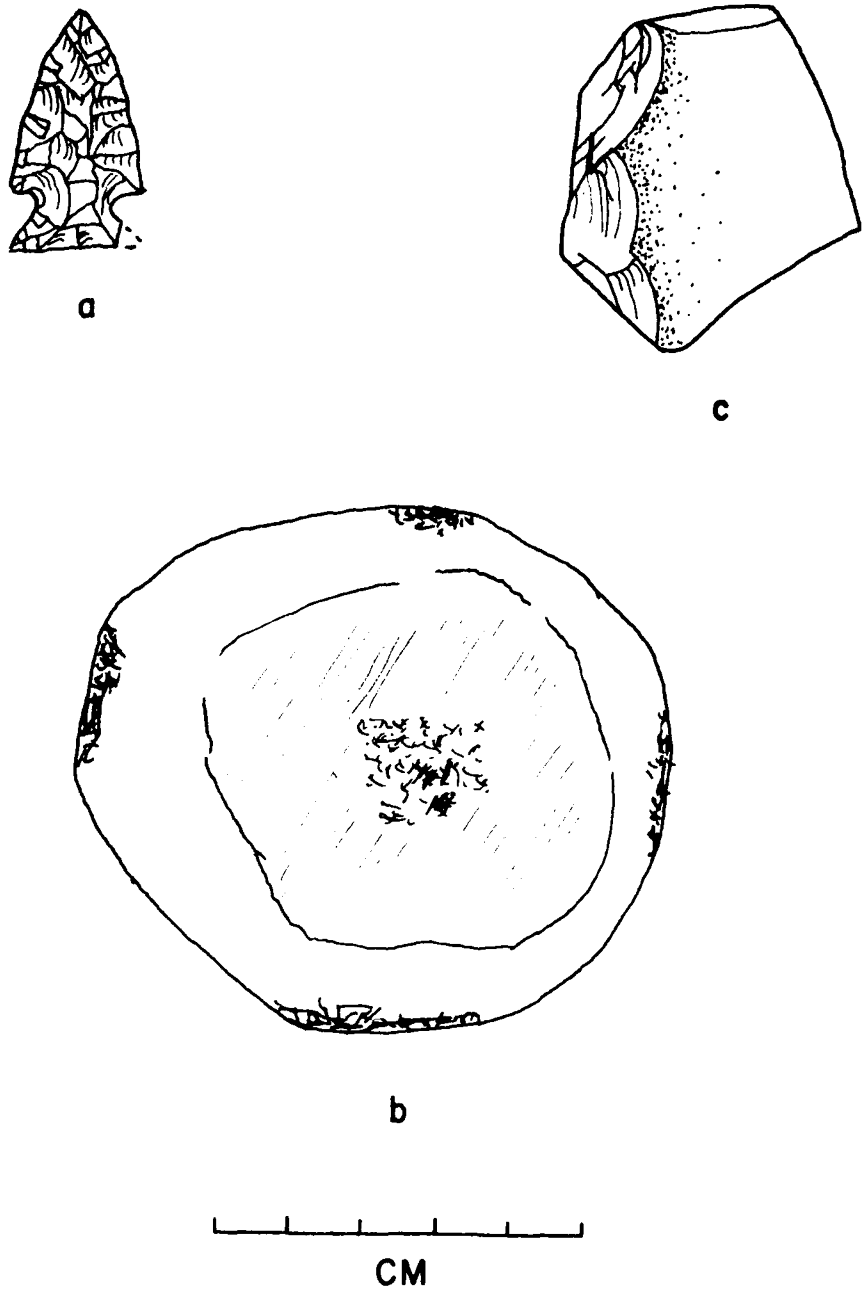


Figure 12. 23MC54 Artifacts. (a) Projectile point, (b) Ground, pecked, and battered stone, (c) Chipped hematite.

23MC55

The site is located on the left (east) bank of the East Fork. The site lies on a low hill which has been isolated by meander loops of the river to the north and south. The river originally flowed immediately to the north of the site. Slope aspect was west. Hill slopes were gentle to the south and west; steep to the river on the north. The hill was bounded by the river to the north; by a small draw to the northeast, by floodplain to the west and south, and by a small wash to the southeast. The size of the site was estimated to be 300 feet east-west by 150 feet north-south. The elevation of the site was approximately 767-775 ft. m.s.l. Vegetation consisted of dense grass, and visibility was poor. Surface material was collected along the southern edge of the site. Material density appeared to be moderate to high. Although the site area had been plowed, sub-plowzone deposits were present, and the latter appeared to be in a good state of preservation.

The site was selected for excavation on the basis of the components present on the site. Although the site contains Woodland components, evidence indicated that there was an Early/Middle Archaic component present below the plowzone. This is one of the few sites with a well-preserved Early/Middle Archaic component. This is probably one of the least understood periods in northern Missouri, and it was felt that this was one of the most important sites in the reservoir area.

Eighteen, one and one-half meter squares were excavated during the 1978 field season (Figure 13). Three rows contained five squares, and the fourth row contained only three squares. The plowzone was initially removed as a single level. This level varied from fifteen to twenty centimeters in depth. Sub-plowzone deposits were excavated in arbitrary ten centimeter levels. A total of two, ten centimeter levels were excavated in all squares to a total depth of twenty centimeters below the plowzone. The total depth of the excavations ranged from thirty-five to forty centimeters below the surface.

Initially, only excavation units 1006, 1007, 1008, 1011, 1012, 1013, 1016, 1017, and 1018 were excavated with all material below the plowzone plotted in place. The remainder of the squares were excavated later without plotting fire-cracked rock in place. Only tools were plotted in place in these excavation units. The distribution of in situ material in these excavation units appears in Figure 14.

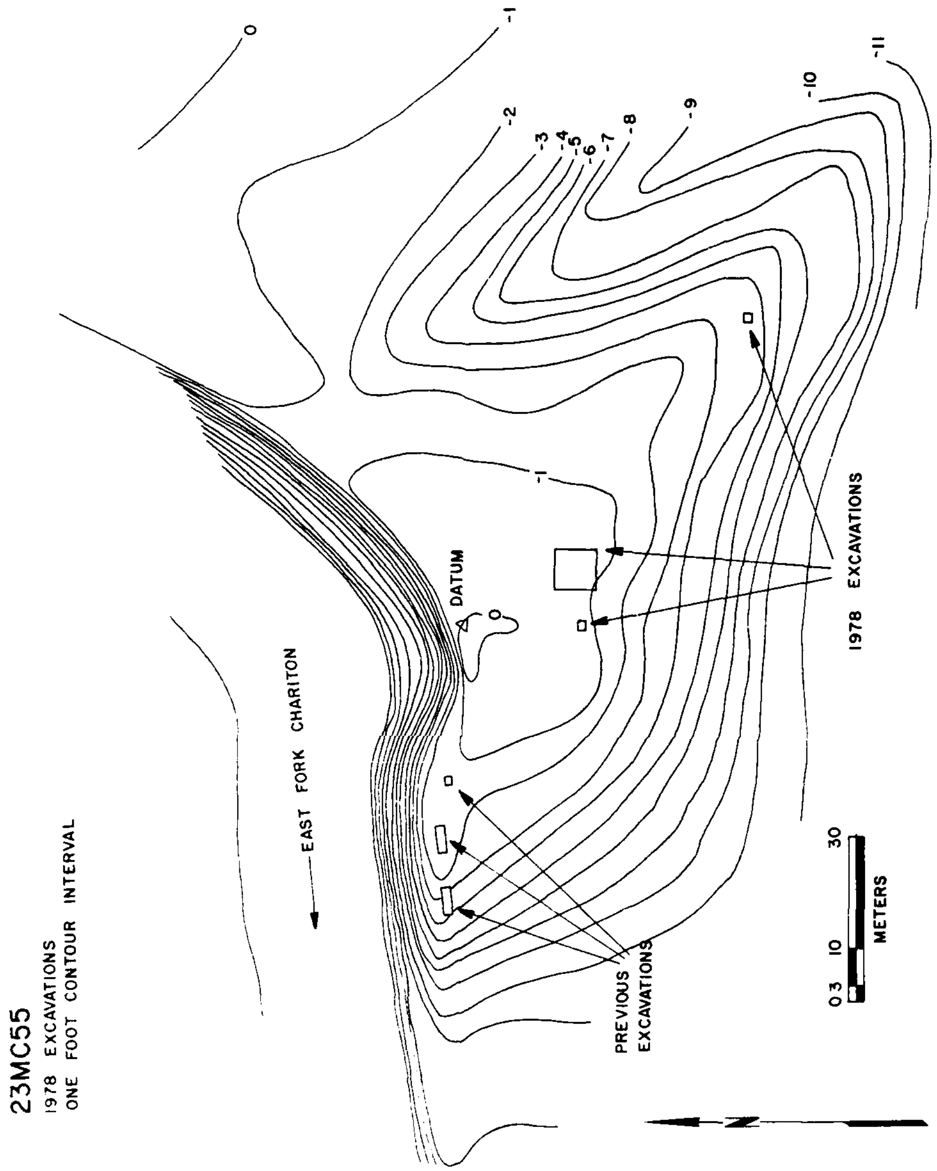


Figure 13. 23MC55. Site Map and Location of Excavations.

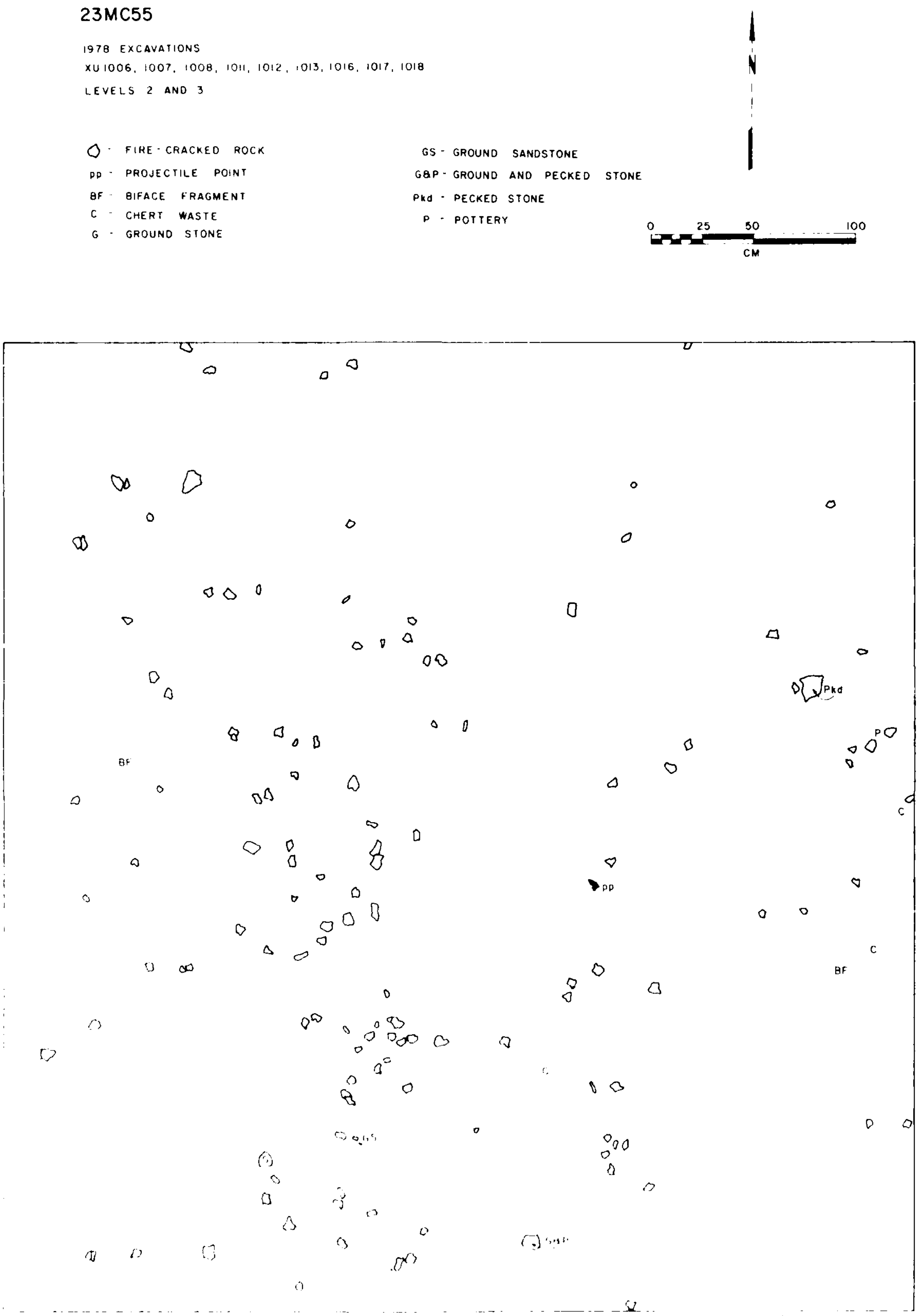


Figure 14. 23MC55. Excavation Distribution Map.

No cultural stratigraphy was noted in the excavations, although deposits do appear to exhibit relative cultural stratigraphy. Deposits were dense in the plowzone and thinned rapidly with depth. Features continued to the base of the excavation units. The only physical stratigraphy noted was the result of soil horizonation. An Ap-horizon extended from the surface to a depth of approximatley fifteen to twenty centimeters below the surface. A B1-horizon extended below that point to a depth of approximately forty centimeters below the surface. A B2t-horizon extended for an undetermined depth below that point.

Features

Feature 1

Feature one was encountered in the northwestern corner of excavation unit 1013 and the southwestern corner of excavation unit 1012 (Figure 15). The feature was identified by its dark organic soil, burned earth, and charcoal which contrasted dramatically with the surrounding soil. The feature was roughly oval and deep. The feature was approximately thirty-three centimeters in length, fourteen centimeters in width, and twelve and one-half centimeters in depth. The feature contained a large amount of decayed organics, fused sediments, irregularly-shaped burned clay, and charcoal. The irregular shape of the feature and the vertical profile suggests a tree cast. This is substantiated by the charcoal which lacks visible ray structure and appears to be root charcoal.

Feature 2

Feature two was encountered in the northwest corner of excavation unit 1013, the southwestern corner of excavation unit 1012, the northern half of the excavation unit 1008, and the southern edge of excavation unit 1007 (Figure 15). The feature is identical to Feature 1 The feature contained a large amount of decayed organics, fused sediments, irregularly-shaped burned clay, and charcoal. The feature was approximately one hundred sixteen centimeters in length, one hundred two centimeters in width, and approximately thirteen centimeters in depth. The irregular shape of the feature and the vertical profile suggest a tree cast. Charcoal appears to be burned roots. A single piece of lead buckshot was also in the feature.

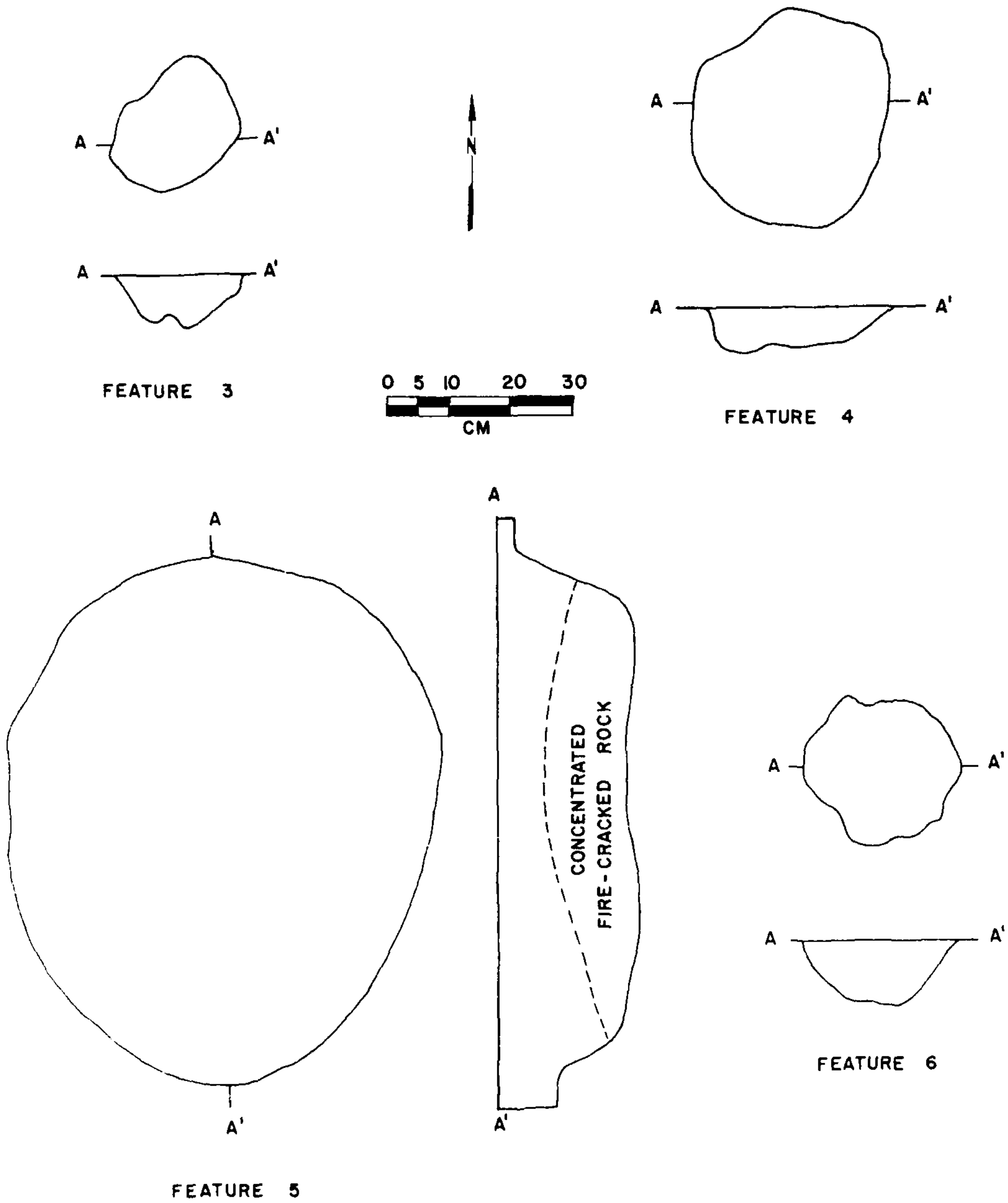


Figure 15. 23MC55. Features - Horizontal and Vertical Profiles.

Feature 3

Feature three was a small conical pit in the northwestern portion of excavation unit 1012 (Figure 15). The feature was identified by ash and charcoal present in the feature which contrasted sharply with the tan loessial soil. The feature was roughly circular in horizontal plan and roughly conical in vertical plan. The feature was approximately nine centimeters in depth. Associated material included a small amount of unidentified wood charcoal.

Feature 4

Feature four was a small basin-shaped pit in the southeastern portion of excavation unit 1008 (Figure 15). The feature was identified by ash and charcoal present in the feature which contrasted sharply with the surrounding loessial soil. The feature was roughly circular in horizontal plan and roughly basin- shaped in vertical plan. Except for the vertical plan, the feature is identical to Feature 3. The feature was approximately twenty-five centimeters in diameter and approximately seven and one-half centimeters in depth. Associated material included a small amount of unidentified wood charcoal. The wood charcoal consisted mainly of twigs.

Feature 5

Feature 5 was a large basin-shaped pit in the northeastern portion of excavation unit 1015 and the southeastern portion of excavation unit 1014. The feature was identified by the large amount of charcoal and ash as well as fire-cracked rock. These contrasted sharply with he surrounding loessial soil. The feature was roughly circular in horizontal plan and markedly basin-shaped in vertical plan (Figure 15). The fill consisted of densely packed fire-cracked rock with charcoal and ash. Charcoal and ash increased with depth and the lower boundary of the pit was dense charcoal and ash. The pit was approximately eighty-eight and one-half centimeters in length, seventy-two centimeters in width, and fifteen centimeters in depth. Associated material includes a basal projectile point fragment, chert waste, and a large quantity of fire-cracked rock. Floral materials included a large amount of wood charcoal. The wood charcoal was largely unidentifiable as most of the material consisted of twigs and small branches. The feature appears to have been a shallow earth oven. A fire was built in the pit, and rocks were placed on the fire in order to help retain the heat produced by the fire.

Apparently the initial fire did not heat the stones sufficiently and fire was also built on top of the stones. As charcoal was present on top and through the stones, the latter seems probable. After the stones had been heated, the object to be cooked was then placed on the rocks and then covered with organic material and finally with earth. This resulted in a dome shaped pit oven.

Feature 6

Feature six was a small conical pit in the northwestern portion of excavation unit 1004 (Figure 15). The feature was identified by ash and charcoal present in the feature which contrasted sharply with the tan loessial soil. The feature was roughly circular in horizontal plan and roughly conical in vertical plan. The feature was approximately twenty centimeters in diameter and approximately twelve and one-half centimeters in depth. Associated material included a small amount of unidentified wood charcoal. The wood charcoal consisted mainly of twigs and small branches.

Description of Materials

Points

Group 3:a Large, Slightly Convex-based, Expanding stemmed Point - 1 proximal fragment (Figure 16,j)

The specimen in this category exhibits a slightly concave base, sharp stem-base juncture, expanding stem, slightly oblique shoulders, and a bi-convex cross-section. The chipping pattern consists of primary percussion flaking with secondary and tertiary pressure flaking. Primary flake scars are large, generally expanding, uneven in size, and inconsistent in distribution. Secondary flake scars are small to medium, lamellar to expanding, fairly even in size, and inconsistent in distribution. The specimen exhibits little tertiary flaking. Tertiary flake scars are generally lamellar, fairly small, fairly even in size, and inconsistent in distribution. Resharpening does not obscure earlier flaking. Resharpening is bifacial-bilateral, and the specimen lacks beveling. Notches were created by the removal of multiple pressure flakes, and final notch flakes originate from the same face. The specimen lacks basal grinding or basal thinning. Blank material is difficult to determine but appears to have passed through a preform stage as both faces exhibit islands of primary flake scars. The specimen exhibits a transverse stress fracture.

Group 11:a-e Large, Straight-based, Side-notched Points - 2, 3 basal fragments (Figure 16, a-e)

The specimens in this category exhibit straight bases, abrupt stem-base junctures, shallow to deep side notches, abrupt shoulders, straight to slightly excurvate lateral margins, and bi-convex cross- sections. Chipping pattern consists of primary percussion flaking with secondary and tertiary pressure flaking. Primary flake scars are large, generally expanding, uneven in size and inconsistent in distribution. Secondary flake scars are small to medium in size, lamellar to expanding, uneven in size and inconsistent in distribution. Specimens 11:a and 11:b still retain a significant portion of the blade element. Both exhibit heavy resharpening. Tertiary flake scars are relatively small in size, lamellar to expanding, fairly even in size and inconsistent in distribution. Tertiary flake scars obscure most of the earlier flaking pattern except the central portion of the blade element where primary flake scars are still present. Tertiary flaking is bifacial-bilateral, and neither are beveled. Notches are created by the removal of multiple pressure flakes from both faces, and final notch flakes originate from the same face on specimen 11:a and alternate faces on 11:b and 11:c. None of the specimens exhibit basal grinding. Blank material is difficult to determine, but it would appear that all specimens passed through a preform stage based on the presence of islands of primary flakes scars on the blade portions of specimens 11:a and 11:b. Specimen 11:c exhibits a transverse stress fracture, specimen 11:d exhibits a compound transverse stress fracture, and specimen 11:e exhibits a transverse stress fracture and a percussion fracture from the transverse fracture through the base.

Group 12:a-b Large, Concave-based, Side-notched Points - 1, 3 proximal fragments (Figure 16, f-h)

The specimens in this category exhibit slightly concave to deeply concave bases, rounded to square stem-base junctures, shallow to deep side notches, abrupt shoulders, and bi-convex cross-sections. Chipping pattern consists of primary percussion flaking with secondary and tertiary pressure flaking. Primary flake scars can be observed on specimens 12:a and 12:c. Primary flake scars are largely obscured by later flaking on specimens 12:c. Secondary flake scars are generally small, lamellar to expanding, fairly even size, and inconsistent in distribution. Tertiary flaking or resharpening appears on specimens 12:a and 12:c. Tertiary flake scars are small, generally lamellar, fairly even in size, and inconsistent in distribution. Resharpening obscures earlier flaking only along the lateral margins. Resharpening is bifacial-bilateral and none exhibit beveling. Notches were created by the removal of multiple pressure flakes, and final notch flakes originate from alternate faces on specimen 12:b, the same face on specimen 12:a. The other two specimens exhibit only one remaining notch. None of the specimens exhibit basal grinding, and specimen 12:b exhibits slight basal thinning. Blank material is difficult to determine, but all appear to have passed through a preform stage as islands of primary flake scars are present on specimens 12:a and 12:c. Specimen 12:b exhibits a transverse stress fracture, specimen 12:e exhibits a deeply oblique stress fracture, and specimen 12:d exhibits a compound fracture across the notches and a stress fracture from that fracture through the base.

Group 13:a Large, Shallow Side-notched Point - 1
(Figure 16,i)

The specimen in this category exhibits a slightly concave base, rounded stem-base juncture, slightly expanding stem, broad shallow side notches, rounded weak shoulders, excurvate lateral margins and a bi-convex cross-section. The chipping pattern consists of primary percussion flaking with secondary and tertiary percussion and pressure flaking. Primary flaking scars are largely obscured by later flaking, and it is difficult to say much about them. An island of primary flake scars is present on one face only. Secondary flake scars are medium in size, lamellar to expanding, uneven in size, and inconsistent in distribution. Tertiary flaking or resharpening is present on both lateral margins on both faces. Resharpening is largely by percussion flaking. Flake scars are lamellar to expanding, uneven in size and inconsistent in distribution. Resharpening obscures much of the earlier flaking. Resharpening is bifacial-bilateral and does not exhibit beveling. The specimen lacks basal grinding and basal thinning. Blank material is difficult to determine but appears to have been made on a large flake as an island of ventral flake scar is present on one face. The specimen is complete.

Group 18:a Large, Triangular Point - 1 (Figure 16, k).

The specimen in this category exhibits a very slightly convex base, very slightly expanding stem, traces of where shoulders had originally been, straight lateral margins, and a bi-convex cross-section. Chipping pattern consists of primary percussion flaking with secondary and tertiary pressure flaking. Primary flake scars are largely obscured by later flaking but appear to have been medium to large in size, generally expanding, uneven in size, and inconsistent in distribution. Tertiary flaking is present on both lateral margins. Tertiary flake scars are small, lamellar to expanding, somewhat even in size, and inconsistent in distribution. Tertiary flaking does not obscure much of the earlier flaking. Resharpening was bifacial-bilateral and the specimen lacks beveling. Resharpening has removed the shoulders from the specimen so that the specimen now appears to be roughly triangular. Blank material is difficult to determine but appears to have passed through a preform stage as evidenced by the islands of primary percussion flaking on both faces. The specimen exhibits a transverse stress fracture which was subsequently chipped on both faces in an attempt to repair the damage.

Group 30:a Medium, Slightly Concave-based, Basal Notched Point - 1 proximal fragment (Figure 16,1)

The specimen in this category exhibits a slightly concave base, sharp stem-base juncture, straight to slightly expanding stem, deep basal notches, extended oblique shoulders, convex lateral margins, and a bi-convex cross-section. The chipping pattern is difficult to determine but appears to have been primary percussion flaking with secondary pressure flaking. Primary flake scars are present on one face only, and are largely obscured by later flaking. Secondary flake scars are small to medium in size, lamellar to expanding, uneven in size, and inconsistent in distribution. The specimen exhibits little or no resharpening. The notches were created by the removal of multiple pressure flakes, and final notch flakes originate from alternate faces. Blank material is difficult to determine but probably passed through a preform stage as determined by the islands of primary flakes scars on one face. The specimen exhibits a transverse stress fracture through the blade and a percussion fracture across one shoulder.

Group 32:a Small, Slightly Convex-based Corner-notched Point - 1 (Figure 17,a)

The specimen in this category exhibits a slightly convex base, sharp stem-base juncture, deep corner notches, abrupt shoulders, angled oblique lateral margins, and a bi-convex cross-section. The chipping pattern consists of secondary and tertiary pressure flaking. Secondary flake scars are generally lamellar to slightly expanding, small, uneven in size, and inconsistent in distribution. Tertiary flake scars are present above the oblique angle in the lateral margins and may be a result of resharpening after fracture. Flake scars are small, generally lamellar to slightly expanding, fairly even in size, and inconsistent in distribution. Tertiary flake scars obscure little of the earlier flaking. Resharpening is bifacial-bilateral, and the specimen lacks beveling. Notches are deep and were created by the removal of multiple pressure flakes. Final notch flakes originate from the same face. Blank material is difficult to determine but appears to have been a flake blank as determined by the extreme thinness of the specimen and the lack of primary percussion flake scars. The specimen is complete.

Group 33:a-b Small, Straight-based, Corner-notched Points - 2 (Figure 17, b-c)

The specimens in this category exhibit straight bases, sharp stem- base junctures, expanding stems, moderately deep corner notches, slightly oblique shoulders, straight to excurvate lateral margins, and bi-convex to plano-convex cross-sections. The chipping pattern consists of secondary pressure flaking only. Secondary flake scars are small, lamellar to expanding, fairly even in size, and inconsistent in distribution. Notches are deep and are created by the removal of multiple pressure flakes. Final notch flakes originate from the same face on both specimens. Blank material appears to be flake blanks as determined by the extreme thinness in specimen 33:a, while specimen 33:b exhibits one entire face representing the ventral face of a flake and a small portion of the bulb of percussion. Flake orientation is distal to the bulb of percussion. Flake orientation on specimen 33:a is undetermined. Both specimens are complete.

Group 45:a-d Unclassified Proximal Projctile Point Fragments - 4 (Figure 17, d-g)

The specimens included in this category lack sufficient criteria to include them with any other projectile point categories. Specimen 45:a exhibits a straight base and contracting stem. The specimen is considerably larger and thicker than most contracting stem points, and it appears probable that it was part of a lanceolate point. The specimen exhibits secondary flake scars which are small to medium in size, generally lamellar, uneven in size, and inconsistent in distribution. It would appear that the fragment probably represents a lanceolate point due to the extreme rapidity of thickness away from the base. Specimen 45:b exhibits a straight base, sharp stem-base juncture, and expanding stem. It would appear that the specimen was originally corner-notched. The specimen exhibits secondary flake scars which are small to medium, lamellar to expanding, uneven in size, and inconsistent in distribution. The specimen exhibits a transverse stress fracture.

TABLE 4

Projectile Points

Artifact Measurements and Attributes - 23MC55

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Points						
Large, Slightly Convex-based, Expanding Stemmed Point						
3:a	1036	32*	31	9	9g*	proximal fragment
Large, Straight-based, Side-notched Points						
11:a	Sur.	48	29	7	10g	
11:b	2025	45*	25	7	11g*	basal fragment
11:c	2019	15*	25*	6	3g*	proximal fragment
11:d	Sur.	13*	20*	7*	2g*	basal fragment
Large, Concave-based, Side-notched Points						
12:a	Sur.	48	30	9	11g	
12:b	1092	18*	27*	6*	3g*	proximal fragment
12:c	1149	34*	17*	6*	3g*	lateral fragment
12:d		16*	17*	7*	4g*	lateral fragment
Large, Shallow, Side-notched Point						
13:a	108	72	28	12	24g	
Large, Triangular Point						
16:a	Sur.	42*	30	10	14g*	proximal fragment, reworked
Medium, Slightly Concave-based, Basal-notched Point						
30:a	2017	26*	29*	8*	6g*	proximal fragment
Small, Slightly Convex-based, Corner-notched Point						
32:a	104	27	25	5	3g	
Small, Straight-based, Corner-notched Points						
33:a	Sur.	32	20	[illegible]	2g	
33:b	Sur.	28	21	3	2g	

Specimen 45:c exhibits a slightly convex base, rounded stem-base juncture, a shallow side notch, a weak, abrupt shoulder, and a bi-convex cross-section. The specimen exhibits secondary flake scars which are generally small to medium, generally lamellar, uneven in size, and inconsistent in distribution. The specimen exhibits an oblique stress fracture. Specimen 45:d exhibits a straight base, rounded stem-base juncture, expanding stem, and bi-convex cross-section. It was probably originally corner-notched. It exhibits a transverse stress fracture.

Group 46:a-e Miscellaneous Small Basal Point Fragments - 5

The specimens in this category exhibit criteria which allow their inclusion as basal point fragments (i.e. stem and notch or stem and base fragments in combination or angularity not characteristic of other portions of points). They lack enough of the point, however, to include them in any other category. Specimen 46:a exhibits a slightly concave base, sharp stem-base juncture, and appears to have originally been corner-notched. Specimens 46:b through 46:d exhibit straight bases, sharp stem-base junctures, expanding stems, and appear to have originally been corner- notched. Specimen 46:e exhibits a convex base, sharp stem-base juncture, expanding stem, and also appears to have originally been corner-notched. All are from relatively small points and exhibit secondary pressure flaking only. Flake scars are small, lamellar to slightly expanding, fairly even in size, and inconsistent in distribution. Notches were created by the removal of multiple pressure flakes. Blank material appears to have been flakes as determined by the thinness of all specimens and the lack of primary percussion flaking. Specimens 46:a, 46:b, and 46:d exhibit transverse stress fractures, and specimens 46:c and 46:e exhibit compound fractures.

Group 47:a-c Distal Projectile Point Fragments - 3

Specimens 47:a and 47:b appear to be from relatively large points. Specimen 47:c is too small a fragment to be able to determine the original size. Specimens 47:a and 47:c exhibit careful trimming along the edges. Specimen 47:b exhibits largely primary percussion flaking. Specimen 47:c also exhibits evidence of tertiary or resharpening flaking. Specimens 47:a and 47:b exhibit transverse stress fractures, and specimen 47:c exhibits double longitudinal compound fractures.

Group 48:a-g Medial Projectile Point Segments - 6

All specimens are relatively large in size and appear to have been worked by percussion and pressure flaking with the exception of specimen 48:c which exhibits secondary pressure flaking only. Specimens 48:a, 48:e and 48:f exhibit heavy resharpening along the lateral margins. Specimen 48:b exhibits double transverse stress fractures. Specimen 48:a exhibits double compound fractures. Specimen 48:c exhibits an impact fracture at the distal end and a transverse stress fracture at the proximal end. Specimens 48:d and and 48:f exhibit a transverse stress fracture and a compound fracture. Specimen 48:e exhibits double thermal fractures. Specimens 48:a, 48:b, 48:d and 48:f are made of chert while specimen 48:c is made of quartzite and specimen 48:e is made of agate.

Group 49:a-g Projectile Point Shoulder Segments - 7

The specimens in this category consist of one shoulder of projectile points ranging in size from small to large. Specimens 49:a, 49:f and 49:g have abrupt shoulders while specimens 49:b, 49:c, 49:d, and 49:e appear to come from relatively small points. Specimens 49:b, 49:f and 49:g come from medium size points, and specimens 49:c and 49:d appear to come from relatively large projectile points. Fractures vary considerably. Specimens 49:a and 49:b exhibit oblique stress fractures from the lateral margins through the notch. Specimen 49:e exhibits a compound fracture through the blade, another through the notch, and a third between the other two fractures. Specimens 49:c, 49:d and 49:g exhibit transverse stress fractures. Specimens 49:b, 49:c and 49:g exhibit transverse stress fractures through the blade and a longitudinal stress fracture from the transverse fracture through the notch. Specimen 49:f exhibits a transverse stress fracture through the blade and a compound fracture from that fracture through the notch.

Scrapers

Group 53:a Scraper on a Biface Fragment - 1
(Figure 17, 1)

The specimen in this category appears to have been produced on a biface fragment after failure of the biface. The portion of the tool furthest from the working element exhibits bifacial working. The specimen was rejected after a flake directed from the proximal end hinged out and removed a large potion of the biface. The specimen was then worked unifacially to produce an end scraper. The working element exhibits little wear except for minute flake removal up the steep face of the working element. Observable wear consists largely of slight edge crushing.

Bifaces and Biface Fragments

Group 67:a-b Proximal Fragments - Thin, Broad, Bifaces with Square Bases - 2 (Figure 17, h-i)

Both specimens in this category exhibit straight bases and parallel lateral margins. They exhibit primary percussion flaking with some secondary flaking on specimen 67:b. Primary flake scars are medium to large, generally expanding and highly inconsistent in size and distribution. Secondary flake scars are small, lamellar to expanding, fairly even in size, and inconsistent in distribution. Neither specimen exhibits observable wear on any of the edges. The chipping pattern and lack of wear on the edges would tend to indicate that the specimen was a preform for another tool. Specimen 67:a exhibits an oblique stress fracture, and specimen 67:b exhibits an oblique thermal fracture.

Group 68:a-b Proximal Fragments - Thin, Broad Bifaces with Rounded Bases - 2 (Figure 17 j-k)

The specimens in this category exhibit roughly convex bases and fairly straight lateral margins. They exhibit primary percussion and secondary pressure flaking. Primary flake scars are fairly large, generally expanding, and inconsistent in size and distribution. Secondary flake scars are small, generally expanding, uneven in size, and inconsistent in distribution. Specimen 68:a exhibits little or no wear along the edges. The chipping pattern and the lack of wear on the edges would tend to indicate that the specimen was a preform for another tool. It exhibits a slightly oblique stress fracture. Specimen 68:b exhibits heavy edge rounding and polish along the edge and flake scar rounding and polish on both faces. The function of the tool is undetermined, but it was used in a motion roughly perpendicular to the proximal end as observable wear is oriented in that direction. It exhibits an oblique stress fracture and a thermal fracture along one lateral margin.

Group 75:a-v Miscellaneous Thin Biface Fragments - 24

The specimens included in this category are broken in such a way as to preculde their inclusion in any other category. Nineteen specimens exhibit careful secondary flaking and edge trimming in order to produce a straight edge. A number of these exhibit resharpening. The other three specimens exhibit largely primary flaking and lack careful edge trimming. Fragments are all small and vary considerably in fracture patterns.

Group 76:a-e Miscellaneous Thick Biface Fragments - 5

The specimens in this category are noticeably thicker than the preceding category. All of the specimens exhibit largely primary flaking, generally lack careful edge trimming, and still retain a sinuous edge. Fragments are all small and vary considerably in fracture patterns.

Cores

Group 77:a-h Polyhedral Cores - 8

The specimens in this category exhibit flakes struck from the chert nodule in multiple directions. No pattern in flake removal is apparent on any of the specimens. All specimens have a fairly large number of flakes removed from the surfaces. Specimens 77:c, 77:d, 77:e, and 77:f still retain cortex on at least one face. Most specimens contain a number of fracture planes within the interiors.

Group 78:a-c Core Fragments - 3

The specimens in this category exhibit flakes struck from the exteriors and have at least one fracture separating it from a larger core. All appear to be fragments of polyhedral cores. Two specimens exhibit sheered surfaces indicative of fracture along fracture planes within the nodule. The other specimen appears to have had a flake struck which removed a significant portion of the core. Only specimen 78:c exhibits cortical surfaces.

Group 79:a Chert Raw Material - 1

The specimen in this category exhibits a number of small flakes removed from one lateral margin. The flakes are small and appear to have been removed largely as a test of the quality of the material. The material is a metaquartzite, and the quality of the material is low. The specimen appears to hvae been discarded without any attempt to remove a larger number of flakes. Cortex is present over the entire surface.

TABLE 5

Scrapers, Bifaces, and Cores

Artifact Measurements and Attributes - 23MC55

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Scrapers						
Scraper on a Biface Fragment						
53:a	Sur	20*	36	10	12g*	proximal fragment
Bifaces						
Proximal Fragments - Thin, Broad Bifaces with Square Bases						
67:a	2002	45*	36	10	20g*	
67:b	Sur.	31*	36	9	11g*	
Proximal Fragments - Thin, Broad Biface with Rounded Base						
68:a	2015	32*	39	9	12g*	
68:b	Sur.	53*	39*	10	20g*	
Cores						
Polyhedral Cores						
77:a	1031	42	22	21	24g	silicified sediments
77:b	103	60	46	21	59g	chert
77:c	1095	54	32	14	23g	chert
77:d	Sur.	30	27	17	12g	chert
77:e	Sur.	52	48	42	115g	chert
77:f	Sur.	59	34	21	54g	chert
77:g	Sur.	54	42	13	23g	chert
77:h	Sur.	41	38	21	34g	chert
Chert Raw Material						
79:a	Sur	109	95	54	753g	FH Metaquartzite

Miscellaneous Worked Chert

Group 83:a-d Miscellaneous Worked Chert - 4

The specimens in this category have been worked bifacially but lack any discernable pattern in flaking. Specimens are irregular in shape, and the flake removal does not appear to have been for further usage of the flakes. Flaking is rough and largely by heavy percussion.

Flake Tools

Group 84:a-h Retouched Flakes - 8

The specimens in this category exhibit intentional removal of secondary flakes along the flake margins. All specimens exhibit modifications of the edges in order to resharpen the edge. Retouching on all specimens is unifacial-unilateral. Retouch on specimens 84:a and 84:b is steep angled, and the specimens appear to have been used in a scraping motion. Specimens 84:c through 84:g exhibit acute edge angles and appear to have been used largely in a cutting motion.

Group 86:a-bl Utilized Flakes - 64

The specimens in this category are flakes or flake fragments which exhibit modification of the flake margins through utilization. Fifty specimens exhibit relatively light utilization, and fourteen specimens exhibit a heavier degree of utilization. Fifty-seven specimens exhibit acute angles along the utilized areas. Seven specimens exhibit fairly steep edge angles. Twenty-eight specimens exhibit one utilized flake margin. Twenty-seven of these specimens have utilization on one of the longest margins, and one specimen exhibits utilization along the distal end. Nineteen specimens exhibit two utilized flake margins. Sixteen of these specimens have the two longest flake margins utilized, and three specimens exhibit one of the longest flake margins and one distal flake margin utilized. Ten specimens exhibit the two longest flake margin and the distal end utilized. Seven specimens are broken in such a way that determination of the numberof utilized margins is impossible.

Ground/Pecked Stone

Group 90:a-p Pecked or Pitted Stone - 16
(Figure 18, a-f)

The specimens in this category exhibit one or more pecked or pitted faces. Six specimens exhibit pecking on two faces, while eight specimens exhibit pecking on one face only. Two specimens are fire-cracked in such a way that it is impossible to determine if more than one face was pecked. Nine specimens have been pecked for a sufficient amount of time with pecking centered in one area to create an actual pit. Pecking on the others is roughly centered on four specimens and more diffuse on three specimens. Six specimens (90:a through 90:f) are of flint hill sandstone. The remaining ten specimens are of a variety of glacial materials.

Group 91:a-b Ground Stone - 2, 7 fragments
(Figure 19,b-c)

The specimens in this category exhibit grinding on at least one face. Specimens 91:g and 91:h exhibit grinding on one face only. The remaining specimens are too fragmentary to determine if grinding was present on the alternate face. Most exhibit relatively fine multi-directional striations and appear to be the result of cultural modification. Some specimens exhibit light polish along higher areas on the surface. A number of the specimens may have originally been multi-functional tools. Specimen 91:i appears to have had grinding as the sole function. It is a fragment of a much larger stone, and was part of a metate.

Group 92:a-f End Battered Cobbles - 6
(Figure 21, a-c)

The specimens in this category exhibit battered areas on the ends and edges of the cobbles. Specimen 92:a is silicified sediments and exhibits battering on two ends and one edge. Edge shattering and edge rounding are absent, and edge crushing appears to be the predominant characteristic. Specimen 92:b exhibits battering on part of two lateral edges. The battered areas are oblique to the longitudinal axis. Battering is moderate to heavy in force, and slight edge crushing is present. Specimen 92:c exhibits battering on two ends and two edges. Battered areas are roughly circular to ovate and are discontinuous. Edge crushing is the predominant characteristic, with edge shattering and edge rounding absent. Specimen 92:d exhibits two ends and one edge battered. The degree of force is generally light and lacks noticeable heavy edge crushing. Edge rounding is

TABLE 6

Ground/Pecked Stone

Artifact Measurements and Attributes - 23MC55

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Ground/Pecked Stone						
Pecked Stone						
[illegible]	Sur.	151	134	39	1018g	Flint Hill Sandstone 1p?
[illegible]	Sur.	75	70	35	288g	Flint Hill Sandstone 1p
[illegible]	Sur.	92	68	52	571g	Argillite 2p
[illegible]	Sur	135	111	39	707g	Argillite 1p
[illegible]	Sur.	65*	59*	39*	213g*	Argillite 1p
[illegible]	Sur	[illegible]	81	47	632g	Diorite 1p
[illegible]	Sur	92	65	47	474g	Argillite 1p
[illegible]	Sur	99*	70*	45*	337g*	Flint Hill Sandstone 1p?
[illegible]	Sur.	55	50	25	203g	Argillite 2p
[illegible]	Sur	107	71	33	313g	Flint Hill Sandstone 2p
[illegible]	Sur.	66	56	48	307g	Diorite 1p
[illegible]	[illegible]	75	71	51	394g	Argillite 1p
[illegible]	[illegible]	79	71	48	583g	Argillite 2p
[illegible]	Sur	135	89	44	474g	Flint Hill Sandstone 2p
[illegible]	[illegible]	116	112	39	775g	Flint Hill Sandstone 2p
[illegible]	Sur	97	62	44	425g	Argillite 1p
Ground Stone						
[illegible]	Sur	35*	27*	12*	15g*	Argillite 1g?
[illegible]	[illegible]	[illegible]	[illegible]	41	268g	Quartzite 1g
[illegible]	Sur	[illegible]	66	40	412g	Argillite 1g
[illegible]	[illegible]	[illegible]	36*	14*	25g*	Diorite 1g?
[illegible]	[illegible]	55*	65*	33*	237g*	Quartzite 1g
[illegible]	Sur	[illegible]	73*	42*	458g*	Diorite 1g?
[illegible]	[illegible]	[illegible]	42*	54*	444g*	Diorite 1g
[illegible]	[illegible]	[illegible]	37*	37*	75g*	Diorite 1g?

TABLE 6 (cont'd)

Modified Stone

Artifact Measurements and Attributes - 23MC55

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Battered Stone						
92:a	Sur.	82	50	37	248g	Argillite 2b
92:b	Sur.	113	65	48	586g	Quartzite 3b
92:c	Sur.	100	78	51	622g	Argillite 2b
92:d	Sur.	75	60	33	278g	Quartzite 4b
92:e	Sur.	70	62	37	174g	Silicified Sediments 3b
92:f	Sur.	90	68	37	386g	Quartzite 2b
Ground and Pecked Stone						
93:a	1144	80*	52*	20*	280g*	Argillite 1p?, 1g?
93:b	Sur.	78	75	29	358g	Argillite 2p, 1g
93:c	Sur.	87	55	43	359g	Argillite 1p, 1g
93:d	Sur.	86	73	34	430g	Diorite 1p, 1g
93:e	Sur.	66	64	34	254g	Argillite 2p, 1g
93:f	1105	84	58	31	291g	Diorite 1p, 1g
93:g	1027	71	67	40	401g	Argillite 2p, 1g
Ground, Pecked, and Battered Stone						
96:a	Sur.	98	84	41	560g	Argillite 1p, 2g, 3b
Chert Core Hammerstones						
97:a	Sur.	70	62	26	138g	
97:b	Sur.	61	58	53	340g	
97:c	2038	81*	27*	20*	118g*	
Pecked Stone - Heavy, Deep, Random Pitting						
98:a	Sur,	106	70	32	311g	Flint Hill Sandstone
Ground Sandstone - Small Basin-shaped						
100:a	Sur.	75	67	40	239g	Flint Fill Sandstone, 4g faces
Ground Sandstone - Small, Flat						
101:a	2038	41*	28*	23*	34g*	Micaceous Sandstone, 2g faces
101:b	1185	67	58	21	88g*	Flint Hill Sandstone, 1g face
101:c	1160	46*	34*	17*	25g*	Micaceous Sandstone, 1g face
101:d	Sur.	21*	21*	7	5g*	Flint Hill Sandstone, 2g faces
Chipped Argillite Cobble						
104:a	Sur.	136	78	76	1368g	Argillite

the predominant characteristic. Specimen 92:e exhibits light battering around the entire circumference of ends and edges. Battering is fairly light and does not appear in discontinuous areas. Specimen 92:f exhibits battering on one end and one edge. Battering was heavy and appears to have been the result of fairly heavy force. Edge crushing is predominant, but some edge shattering is present in both areas. Light battering is also present over the rest of the circumference of the tool.

Group 93:a-g Ground and Pecked Stone - 6, 1 fragment
(Figure 19, d-f)

The specimens in this category exhibit one or two pecked faces and one or two ground faces. Pecking is detectable by cortex removal and centralized pecking. Only specimen 93:g exhibits a noticeable pit. All specimens exhibit grinding on one face only. Specimens 93:a and 93:f exhibit pecking on one face only. Specimens 93:c, 93:d, 93:e, and 93:g exhibit pecking on both faces. Specimen 93:b is broken in such a way that determination of the number of faces is impossible. All specimens are glacial cobbles.

Group 96:a Ground, Pecked and Battered Stone - 1
(Figure 20, a)

The specimen in this category exhibits two ground faces, one pecked face, and multiple battered ends and edges. Pecking is somewhat centered on the faces but is scattered and somewhat diffuse and an actual pit has not been created. Grinding is apparent on both faces. Grinding has removed much of the cortex. Surface smoothing and polish of one surface is also present. There are no readily observable striations. The degree of grinding on one face is moderate; light to moderate on the other. Battering is present along one end and along one edge. Battering does not extend upon to the surface of the face. Edge crushing is present, but edge shattering and edge rounding are lacking. The battered areas are relatively long and lenticular and are discontinuous.

Group 97:a-c Chert Core Hammerstones - 2, 1 fragment
(Figure 21, d-e)

The specimens in this category appear to have originally been chert cores as evidenced by islands representing flake removal from the faces. The specimens all appear to have been polyhedral cores. Specimen 97:a exhibits heavy and continued usage. The wear pattern is characterized predominantly by edge crushing, and the specimen lacks any noticeable degree of edge rounding or edge shattering. Specimen 97:b still retains cortex on one face. The alternate face exhibits a fracture plane which appears to have separated the material from a core. The specimen has not been used as heavily as 97:a, but it exhibits edge crushing along one end from the center of one lateral edge to the center of the other lateral edge and at the point of the other end. Edge shattering and edge rounding are absent. Specimen 97:c is a fragment of a chert core hammerstone. A small island of cortex still remains along one edge with multiple flakes removed on the remaining portion of the faces. The specimen exhibits edge crushing along the entire perimeter of one edge. Edge rounding and edge shattering are absent.

Group 98:a Heavy Facially Battered Stone - 1
(Figure 19, a)

The specimen exhibits pecking on one face of the stone. The type of pecking differs significantly from that in the previous category, however. The degree of force appears to have been quite heavy. The specimen is flint hill sandstone. Function is undetermined.

Group 100:a Ground Sandstone, Small Basin-shaped - 1
(Figure 20, b)

The specimen in this category is a fragment of a small metate-like tool. Material is glacial sandstone and is considerably rougher in texture than flint hill sandstone. The specimen is small and basin-shaped with grinding apparent on both faces. Grinding is fine and lacks any noticeable striations. The direction of use on opposite faces are perpendicular to each other.

Group 101:a-d Ground Sandstone, Small Flat - 4
(Figure 20, c-f)

There are three specimens in this category which are small and exhibit grinding on one face only. Specimens are small and were not fragments of larger tools. Specimens 101:a and 101:c are micaceous sandstone, and 101:b is flint hill sandstone. Surfaces are heavily smoothed, but there are no readily observable striations on any of them. Specimen 101:d exhibits faceted surfaces and was used on at least three faces. Faces are considerably smoothed and have almost completely smoothed out all irregularities. The material is glacial sandstone. It does not exhibit any noticeable striations or polish.

Group 104:a Chipped Argillite Cobble - 1
(Figure 21, f)

The specimen in this category exhibits chipping along one lateral margin. The specimen is otherwise unmodified. A number of flakes have been removed from that margin and has produced a sinuous edge. Flaking along the distal end appears to have been unsuccessful and a blunt rounded end was created. Some edge rounding appears along the margins of flake scars, and it is quite possible that the specimen was used in a chopping motion. The chipped edge is not straight but is highly concave.

Hematite

Group 117:a-d Chipped Hematite - 4
(Figure 22, a-d)

The specimens in this category exhibit flakes removed from the margins. Four specimens were recovered which fall in this category. Specimen 117:a exhibits flakes removed from the two lateral margins bifacially. It appears that the specimen was being shaped for a tool. Specimen 117:b also has flakes removed bifacially-bilaterally and was probably in the process of being shaped for a tool. Specimens 117:c and 117:d have flakes removed irregularly; and both are angular. It does not appear that these specimens were being shaped for tools.

Group 118:a Ground Hematite - 1 (Figure 22, e)

The specimen in this category exhibits ground faces. There are six facets, and all sides have been smoothed by grinding. The specimen is roughly triangular in outline. The specimen exhibits fine striations which are unidirectional on individual faces. Striations are the result of grinding on a fine-grained abrasive.

Group 119:a-ai Hematite Flakes - 35 (Figure 22, h-l)

There were thirty-five hematite flakes recovered from the excavations. Twelve flakes exhibit exterior cortical surfaces. The other twenty-one flakes are interior flakes and lack any cortical surfaces.

Group 120:a Ground and Chipped Hematite - 1
(Figure 22, g)

The single specimen exhibits flakes removed unifacially-bilaterally. The specimen is small and flakes are not removed along the entire lateral edges. One edge was subsequently lightly ground. Grinding does not cover the entire face and is present only on the higher points. Striations are present and are unidirectional.

Group 121:a-c Ground Hematite Flakes - 3
(Figure 22, f)

The specimens in this category are flakes removed from ground hematite. The ground faces are highly smoothed, and striations are largely unidirectional. They are the result of grinding on a fine-grained abrasive. The alternate face exhibits the criteria of percussion flakes.

Ceramics

Pottery - 98

Sample: 3 body sherds and 95 highly eroded body sherds

Group 126:
Ceramics One: Cord marked or smooth exteriors, sand tempered

Sample: 3 body sherds and 79 highly eroded body sherds

Paste:

Temper: Sand size particles, mainly quartz but with some plagioclase. Particles are generally very small (.1 to 1 millimeter) but with a few large (up to 3 millimeter) particles.

Texture: Paste ranges from friable to highly compacted. In less compacted sherds lamination tends to occur parallel to the interior/exterior surfaces. More compacted sherds exhibit less visible lamination. Sherds break irregularly.

Color: Color is highly variable. Colors range from reddish yellow (5YR7/8) through red (2.5YR5/8) to reddish brown (2.5YR5/4). Darker shades include a light brownish gray (10YR6/2) to dark reddish gray (10YR4/1), dark gray (5YR4/1), and black (5YR2/1).

Method of Manufacture: The probability is high that specimens were lump modeled as there are no straight breaks indicative of coiling, and finger marks on interiors are abundant. Specimens exhibit the use of a paddle on the exterior as temper has been compressed. Exteriors often exfoliate as a unit and particle sizes are often smaller near the exteriors.

Surface Finish: Cord marking appears on the exterior of two sherds. Two other sherds exhibit smoothed exteriors.

Decoration: Undetermined

Form: Undetermined

Group 129:
Ceramics Two: Heavy Sand Tempered Sherds

Sample: 16 highly eroded body sherds

Paste:

Temper: Sand sized particles predominantly quartz but with some plagioclase. Particles are highly rounded. Particles are generally small (.1 to .7 millimeters) but with a few (up to 5 millimeter) particles.

Texture: Temper is evenly distributed. Paste is only slightly compacted. Lamination occurs parallel to the interior/exterior surfaces. All sherds exhibit irregular surfaces. The specimens contain approximately 40-60 percent temper.

Color: Interior and exteriors are dark reddish brown (2.5YR5/4) and interiors approach black (5YR2/1).

Method of Manufacture: The vessels appear to have been lump modeled as there are no breaks indicative of coiling and finger impressions are abundant on the interior.

Surface Finish: Exteriors were probably cord marked with evenly spaced cord impressions as evidenced on a single sherd.

Decoration: Undetermined

Form: Undetermined

Group 133: Burned Clay - 442

The specimens in this category are clay which has been fired intentionally or unintentionally. They differ from pottery only in that they lack temper. Most specimens are highly eroded and irregular in shape. Most of the fired clay recovered comes from the excavation units which cover Featues 1 and 2.

Lithic Waste

Group 134: Chert Waste - 3,307

A total of 2,337 unmodified chert flakes and 497 unmodified pieces of chert shatter were recovered from the excavations. Four hundred twenty-eight unmodified chert flakes and forty-five pieces of unmodified chert shatter were recovered from the surface.

Group 135: Quartzite Waste - 14

Seven unmodified quartzite flakes and two pieces of unmodified quartzite shatter were recovered from the excavations. Three unmodified quartzite flakes and two pieces of unmodified quartzite shatter were recovered from the surface.

Group 136: Quartz Waste - 8

Three quartz flakes and five pieces of quartz shatter were recovered from the surface.

Group 137: Silicified Sediments Waste - 3

One unmodified silicified sediments flake and two pieces of unmodified silicified sediment shatter were recovered from the excavation units.

Group 139: Argillite Waste - 4

Two argillite flakes were reovered from the excavation unit, and two unmodified argillite flakes were recovered from the surface.

Group 141: Fire-cracked Rock - 41,888

A total of 35,694 pieces of fire-cracked rock were recovered from the excavations; 4,489 pieces of fire-cracked rock were recovered from the surface and 1,705 pieces of fire-cracked rock come from Feature 5.

Group 142 Unmodified Stone - 1,523

The specimens in this category consist of unmodified glacial material. They exhibit no intentional or unintentional cultural modifications. 1,479 pieces were recovered from the excavation units, 40 pieces were recovered from he surface, and four pieces were recovered from Feature 5.

Historic

Group 144: Miscellaneous Historic Material - 688

A total of 688 pieces of historic material were recovered from the excavations. Historic material included a full range of historic items generally discarded including ironstone, glass, metal fragments, nails, stoneware, gizzard stones, fence post insulators, bone, as well as evidence of modern hunting and target practice including a number of .22 cartridges, lead shot, and clay pigeons.

TABLE 7

DISTRIBUTIONAL SUMMARY

		3	11	12	13	18	30	32	33	45	46	47	48	49	53	67	68	75	76	77	78	79	83	84	86	90	91	92	93	96	97
Xu 102.	L. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 10o.	L. 1	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 1001.	L. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 1[illegible]02.	L. 1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	L. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	3	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	L. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	L. 1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	3	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	L. 1	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	3	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	L. 1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	1	1	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	L. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-
	L. 2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	L. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	2	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	L. 1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	4	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	2	-	-	-	1	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	L. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	L. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	2	-	-	-	-	-	-
	L. 2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	L. 1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	2	-	-	-	1	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Xu [illegible]	L. 1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	-	3	-	1	-	-	-	-
	L. 2	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]15.	L. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]16.	L. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 1017.	L. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	1	-	2	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	L. 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	1	-	-	-	-	2	-	-	-	-	-	-
	L. 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L. 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Feature 1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Feature 2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Feature 3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface		-	3	1	-	1	-	-	2	2	3	-	2	3	1	-	1	8	3	5	3	1	3	3	14	13	5	6	4	1	2

TABLE 7 (cont'd)

DISTRIBUTIONAL SUMMARY

	98	100	101	104	117	[illegible]	119	120	121	126	129	133	134	135	136	137	139	141	142	144
Xu 102, L.1	-	-	-	-	-	-	3	-	-	-	-	1	60	2	-	-	-	914	41	4
L.2	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	599	25	1
L.3	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	25	5	-
Xu 106, L.1	-	-	-	-	-	-		-	-	5	1	-	96	1	-	-	1	1168	32	16
L.2	-	-	-	-	-	-	-	-	-	4	2	1	94	-	-	-	-	963	30	8
L.3	-	-	-	-	-	-	-	-	-		1	-	17	-	-	-	-	279	17	-
Xu 1001, L.1	-	-	-	-	-	-	-	-	-	2	-	3	73	1	-	-	1	733	50	26
L.2	-	-	-	-	-	-	-	-	-	1	-	-	31	-	-	-	-	437	23	2
L.3	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	43	8	-
Xu 1002, L.1	-	-	-	-	-	-	1	-	1	3	1	-	48	-	-	-	-	764	31	-
L.2	-	-	-	-		-	-	-	-	1	-	-	33	-	-	-	-	334	20	25
L.3	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	64	12	6
Xu 1003, L.1	-	-	-	-	-	-	-	-	-	3	-	-	69	1	-	-	-	418	32	-
L.2	-	-	-	-	-	-	2	-	-	-	-	-	41	-	-	-	-	428	19	26
L.3	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	25	16	3
Xu 1004, L.1	-	-	-	-	-	-	1	-	-	-	-	-	84	-	-	-	-	988	57	-
L.2	-	-	-	-	-	-	2	-	-	-	-	-	23	-	-	-	-	502	34	20
L.3	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	59	17	1
Xu 1005, L.1	-	-	-	-	-	-	1	-	-	-	-	-	72	-	-	-	-	965	29	-
L.2	-	-	-	-	-	-	-	-	-	-	-	-	26	-	-	-	-	267	10	26
L.3	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	5	5	-
Xu 1006, L.1	-	-	-	-	-	-	1	-	-	2	-	-	154	-	-	-	-	1236	46	1
L.2	-	-	-	-	-	-	-	-	-	2	4	-	54	-	-	-	-	566	19	25
L.	-	-	-	-	-	-	-	-	-	-	1	1	5	-	-	-	-	140	16	2
Xu 1007, L.1	-	-	-	-	-	-	-	-	-	3	-	21	76	-	-	-	-	1080	35	-
L.2	-	-	-	-	-	-	-	-	-	1	2	4	45	-	-	-		341	14	31
L.3	-	-	-	-	-	-	-	-	-	-	-	-	25	-	-	-	-	212	5	2
Xu 1008, L.1	-	-	-	-	-	-	-	-	-	1	-	10	71	-	-	-	-	1094	31	-
L.2	-	-	1	-	-	-	2	-	-	-	-	5	41	-	-	-	-	459	21	23
L.3	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-	138	17	2
Xu 1009, L.1	-	-	-	-	-	-	2	-	-	3	-	5	87	-	-	-	-	1442	29	1
L.2	-	-	-	-	1	-	2	-	-	-	1	-	43	-	-	-	-	455	16	40
L.3	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	41	10	-
Xu 1010, L.1	-	-	-	-	-	-	2	-	1	4	1	1	109	-	-	1	-	1723	35	-
L.2	-	-	-	-	-	-	-	-	-	-	-	-	39	1	-	-	-	570	19	23
L.3	-	-	-	-	-	-	-	-	-		-	4	10	-	-	-	-	319	8	2
Xu 1011, L.1	-	-	-	-	-	-	-	-	-	5	-	12	137	1	-	-	-	1408	78	-
L.2	-	-	-	-	-	-	-	-	-	-	-	-	79	-	-	-	-	340	21	57
L.3	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	35	12	1
Xu 1012, L.1	-	-	-	-	-	-	1	-	-	1	-	31	121	-	-	-	-	1140	37	-
L.2	-	-	-	-	-	-	-	-	-	1	2	23	28	-	-	-	-	407	11	31
L.3	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	107	6	5
Xu 1013, L.1	-	-	-	-	-	-	-	-	-	3	-	111	114	-	-	1	-	1641	40	-
L.2	-	-	1	-	-	-	-	-	-	-	-	25	21	-	-	-	-	426	11	57
L.3	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	-	142	17	5
Xu 1014, L.1	-	-	-	-	-	-	-	-	-	-	-	-	123	1	-	-	-	1652	61	-
L.2	-	-	-	-	-	-	-	-	-	-	-	-	55	1	-	-	-	570	15	48
L.3	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	49	24	-
Xu 1015, L.1	-	-	-	-	-	-	1	-	-	5	-	3	117	-	-	-	-	1719	55	-
L.2	-	-	1	-	-	-	3	-	-	1	-	-	74	-	-	-	-	679	13	48
L.3	-	-	-	-	-	-	1	-	-	-	-	-	8	-	-	-	-	150	4	5
Xu 1016, L.1	-	-	-	-	-	-	-	-	-	1	-	3	84	-	-	-	-	1172	57	-
L.2	-	-	-	-	-	-	-	-	-	1	-	-	17	-	-	-	-	302	15	44
L.3	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	34	22	2
Xu 1017, L.1	-	-	-	-	-	-	-	-	-	2	-	13	86	-	-	-	-	1269	50	-
L.2	-	-	-	-	-	-	1	-	1	5	-	-	41	-	-	1	-	430	12	34
L.3	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	51	9	2
Xu 1018, L.1	-	-	-	-	-	-	-	-	-	7	-	13	91	-	-	-	-	1549	40	-
L.2	-	-	-	-	-	-	-	-	-	4	-	-	35	-	-	-	-	536	16	34
L.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53	17	-
Feature 1	-	-	-	-	-	-	-	-	-	-	-	47	-	-	-	-	-	7	1	-
Feature 2	-	-	-	-	-	-	-	-	-	-	-	79	3	-	-	-	-	22	2	1
Feature 3	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	1705	4	-
Surface	1	1	1	1	3	1	6	1	-	11	-	27	473	5	8	-	2	4489	40	-

The projectile points in Group 11 are similar to a number of published groups. The specimens are identical to the type Godar Side-notched (Perino 1973:85) from an Archaic charnal pit on the Pete Klunk site. The type is common in the Prairie Peninsula and are found throughout the Midwest. They appear in surface collections from northwestern Missouri (Shippee 1967:30, 33; Fig. 19, b; 56; Fig. 34, c-d; Chomko and Griffin 1975:Fig. 3, h; Vehik 1971:20-21;Fig. 3, h; and Weichman 1976a:Pl. 1, c,m; Pl. 5, a-b) and northeastern Missouri (Eichenberger 1944:Pl. 7, row 5; and Henning 1961:173-174; Fig. 28, b-c). Excavated sites in northeastern Missouri with similar points include Graham Cave (Logan 1952:33; Pl. III, a-b; and Klippel 1971:26; Fig. 11, c-d) where they appear throughout the sequence, the Collins site (Klippel 1972:18; Fig. 13, 3r-3v), and the Booth site (Klippel 1968:10; Pl. 4B, a). In Illinois they appear to be common in Archaic contexts, and side- notched forms at Modoc Rock Shelter (Fowler 1959a) appear most commonly from the Middle Archaic period. Similar materials from Horizon I of the Cherokee Sewer site (Anderson 1974:69; Fig. 45, a) yielded dates of 5950 + 80 B.P. and 6300 + 90 B.P. (Shutler and Anderson 1974:9). Side-notched forms appear throughout most of the Early and Middle Archaic periods in Iowa from 8500-4500 B.P. and led Anderson and Shutler (1974:161-167) to propose a "Prairie Archaic" which is characterized by side-notched forms. Chapman (1975:242) notes that the form Big Sandy Notched (some of which bear a resemblance to this category) occur from about 5000-500 B.C. in central Missouri. They appear to have largely Middle Archaic contexts throughout most of central and southern Missouri and appear to be the most distinctive type of that period. Similar forms appear to occur in Early Woodland contexts in Illinois and possibly eastern Missouri. It appears, however, that this and related forms are most characteristic of Early/Middle Archaic contexts in the reservoir area.

The projectile points in Group 12 are similar to the type Hemphill (Perino 1971b:50), while specimen 12:b appears to be closer to the type Graham Cave Notched (Chapman 1975:248). Specimen 12:c is not sufficiently complete to make meaningful comparisons, but all appear to be part of the original Big Sandy Complex as defined by Lewis and Kneberg (1959). Concave-based forms appear throughout Missouri and are reported from Arnold Research Cave, the White River Complex, Graham Cave, and Hidden Valley Shelter (Chapman 1975:Fig. 6-14, a; Fig. 7-6, a-b; Fig. 7-14, e-h; Fig. 7-16, c-d). They appear throughout northern Missouri in surface collections (Chomko and Griffin 1975:Fig. 5, b; Eichenberger 1944:Pl. I, row 5; Henning 1961:173-174: Fig. 26, SN-4, SN-5; and Shields 1966b:118, 124) and from excavated sites such as Graham Cave (Logan 1952:30; Pl. V, h-j; Kilppel 1971:26) and the Collins site (Klipel 1972:18; Fig. 13, 3a- 3n). Again, as with straight-based, side-notched points, these forms appear to be predominant throughout the Middle Archaic period in central Missouri. Radiocarbon dates from the Middle Archaic levels at the Pigeon Roost Creek site appear to average 3960 ± 168 B.C. for the upper cluster of dates and a mean date of 4394 + 92 B.C. for the lower cluster (O'Brien and Warren 1979). Both this level and a lower Archaic level contained only Big Sandy Complex points. Unfortunately, there were no radiocarbon samples from the lower level. It is possible that this represents an Early Archaic component rather than another Middle Archaic component based on he lower range of dates from the upper level and the sterile separation. If this were true, then Anderson and Shutler's (1974) proposed "Prairie Archaic" may be the dominant trait throughout most of northern Missouri for the Early/Middle Archaic periods.

The specimen in Group 13 is not believed to be particularly diagnostic. The specimen is worked largely by percussion in the later stages, and it is expected to heavily modified from its original shape. It appears that it could be argued that it resembles the type Rice Side Notched (Chapman 1980:311-312) but it could be argued equally well that it resembles a variety of modified basic forms (e.g. Big Sandy Notched). It, therefore, appears that comparisons are not well made and are not particularly informative.

The specimen in Group 3 is somewhat difficult to find directly comparable material. It appears to have some affinities for Stone Square Stemmed and Etley- like varieties (Chapman 1975:257; Klippel 1972:15-16;Fig. 9, a-h). Variants on these basic forms (Chapman 1975:Fig. 8-9, c; Henning 1961:146; Fig. 28, n; Chomko 1976:34; Fig. 17, m) are closer in shape. Shields (1966b:115-116, 121) illustrates similar points from Thomas Hill reservoir. The closest comparable material appears from the Booth site (Klippel 1968:8; Pl. 3A, a-b). They also bear a distinct resemblance to some Etley-like variants as illustrated by Chapman (1975:Fig. 8-19, f, from the Pauling site and Fig. 8-15, a, from the Cuivre River ceremonial component). The specimen would appear to represent related material. Chapman (1975) indicates that Etley Stemmed varieties are most common types in Late Archaic contexts. Fowler (1957:17) indicates that corner-notched and/or expanding stemmed varieties such as these are the most common types in

Late Archaic contexts. Stone Square Stemmed and Etley Stemmed varieties from the Pigeon Roost Creek site were recovered from a level yielding corrected dates (Damon et al. 1977) of 1150 ± 280 B.C. and 1180 ± 200 B.C. (O'Brien and Warren 1979).

The specimen in Group 18 is difficult to compare directly with other material due to its apparent reworked condition. Similar material is illustrated by Wood (1961:131, cat. Z), Chomko (1976:36; Fig. 18, f), Logan (1952:Fig. 3,n; Fig. 5, d). Some of these (particularly those illustrated by Logan 1952) appear to be reworked forms as well. Their general comparability to stemmed forms, particularly Stone Square Stemmed variants below the reworked blade, would tend to indicate a similar chronological assignment as Group 18 above. Previous work in the reservoir area (Grantham 1977:94-95) indicates that similar forms were recovered only from sites with Late Archaic components.

The specimen in Group 30 is not unlike the type Smith Basal Notched (Chapman 1975:256-257) with the noticeable lack of a straight base and slightly expanding stem. Smith Basal Notched appears to be common in southwest Missouri (Chapman 1956; Chapman 1975:184-200; Wood 1961; Roper 1977:50; Pl. 1, g, h; Marshall 1963:8, Fig. 8; and Calabrese, Pangborn, and Young 1969:Pl. I, f). They appear as a less common form in central Missouri from Sedalia Complex sites (Chapman 1975:Fig. 8-14) and from Graham Cave (Logan 1952: 35: Pl. X, e, f; Pl. XI, l; Pl. XII, a; and Klippel 1971; 30; Fig. 14, i). They appear to be uncommon in northern Missouri (Henning 1961:142, 174). Chapman (1975) considers the form to be primarily Late Archaic, although having its beginnings in the Middle Archaic.

The specimens in Groups 32 and 33 appear to be related and are generally subsumed under the same general type. They appear to be intermediate between Norton Corner-notched (White 1968:71) and later Koster Corner-notched (Perino 1971a:100). These appear to fit well with White's (1968) subtriangular varieties, which appear to date from late Middle Woodland through early Late Woodland. They are slightly larger than the type Koster Corner-notched, and the method of manufacture appears to be similar. Koster Corner-notched is particularly common in northeastern Missouri (Eichenberger 1939; Eichenberger 1944:Pl. III; Eichenberger 1956:Fig. 4; Henning 1961:139, 175; and Hunt 1976). Some related material occurs further west (Weichman 1976a:Pl. 3, a; Vehik 1971; Fig. 2, a; and Shippee 1967:Fig. 35, a; Fig. 70, k, l; and Fig. 45, f). It is felt that White's (1968) estimate of late Middle Woodland to early Late Woodland is probably correct for the chronological placement of this type.

Little can be said of the point fragments in Group 45. Specimen 45:a, if it is indeed a lanceolate point, appears to fit well with the type Agate Basin Lanceolate (Chapman 1975:241-242) with the exception of basal grinding. The form appears to be widespread and has a long temporal range. Chapman (1975:241) notes their occurrence in the West as a Plano form and dates fairly early (8000-6000 B.C.). Wormington (1957:141, 269) defined Agate Basin points, and these specimens are similar except for the lack of horizontal parallel flaking and the lack of basal grinding on the lower lateral margins and base. Dates from the Cherokee Sewer site of 8500 $\pm$ 200 B.P. and 8570 $\pm$ 200 B.P. on Horizon III material which included an Agate Basin-like point (Shutler and Anderson 1974:11) would place the material near the end of Plano in northwestern Iowa. Agate Basin-like points are present from the Dalton Complex of Arnold Research Cave (Chapman 1975:Fig. 5-17, a); from Early Archaic contexts at the Dalton site (Chapman 1975:Fig. 6-8, row B) and Arnold Research Cave (Chapman 1975:Fig. 6-14, d-e); and from Middle Archaic components in Rice Shelter, Rodgers Shelter, and Arnold Research Cave (Chapman 1975:242). Neither specimen 45:b or 45:c are considered diagnostic due to the highly fragmentary condition of the specimens and no comparison is offered.

Thus, the projectile points, indicate that there are at least three major components on the site. The nine projectile points recovered during the excavations in Groups 11 and 12, and possibly the lanceolate fragment in Group 45 represent an Early/Middle Archaic component. This is supported by the recovery of two additional side-notched, straight-based point fragments from the surface (Grantham 1977) and one from test excavations (Grantham 1979). A complete Agate Basin Lanceolate point was also recovered from the surface (Grantham 1977). A Late Archaic component is represented by points in Groups 3, 18, and 30. A Late Archaic component had not been previously recognized on the site. A late Middle Woodland or Late Woodland component is represented by points in Groups 32 and 33. Previously recovered material indicative of a Woodland occupation included a contracting-stemmed, straight-based point from the surface (Grantham 1977) and a small side-notched point from test excavations on the site (Grantham 1979). The latter would tend to indicate a Late Woodland occupation.

The relative stratigraphy of the points is rather straight-forward. Only two points were recovered from below plowzone contexts. These were specimens 11:b and 12:c. All of the other points were recovered from the surface or from plowzone contexts. It would thus appear that only the Early/Middle Archaic component is partially undisturbed.

The upper portion of the Early/Middle Archaic component and all of the later components are disturbed and contained within the plowzone.

The number of projectile point fragments does not appear to be particularly informative except that the number of distal point fragments is relatively low given the number of proximal and medial point fragments. The larger biface fragments in Groups 67 and Group 68:a exhibit little or no wear and appear to be unfinished tools or preforms for other tools. The specimen in Group 68:b appears to be a fragment of a completed tool. The function of the tool is unknown, but the orientation of the wear tends to indicate use motion parallel to the longitudinal axis. The large number of miscellaneous biface fragments (Groups 75 and 76) as well as the fragmentary nature of almost all chert tools illustrates a long use-life for tools and heavy reuse of tools until too fragmentary to be useable. Reuse of even biface fragments (Group 53) is apparent. The scraper on a biface fragment and the flake scraper in Group 84 (specimen 84:a) indicate an additional activity on the site.

Flake tools (Group 84 and 86) are not particularly numerous when compared with the larger number of other tools and the greater number of such incidental tools common in other areas. The number of utilized flakes is, however, relatively high for the area. Both retouched and utilized flakes indicate that cutting activities were dominant. It appears, as is usually the case in the reservoir area, that the relatively small number of incidental tools is the result of the small size of chert waste. Almost all chert flakes larger than one-half inch have been utilized. Thus, the small number is a reflection of the small amount of useable chert waste and not a low usage of flakes for tools. The lithic technology on Early/Middle Archaic period sites appears, however, to produce a higher proportion of larger chert waste and may account for the larger numbers of incidental tools on this site. The presence of chert cores (Groups 77-79) indicates the use of local sources of raw materials. Since the amount of such material is low, little reliance appears to have been placed on local materials. The amount of chert waste, quartzite waste, quartz waste, and silicified sediments waste is only moderate for sites in the area. The use of the latter three types of stone also indicates use of local materials. The chert waste indicates a heavier reliance on non-local cherts. Approximately sixty percent of the total chert waste appears to be non-local in origin.

The most outstanding aspect of the tool assemblage is the large number of ground and pecked stone tools.

Sixty-seven percent of the total morphologically recognizable tools are in this class. Groups 90, 91, 93, and 96 appear to be tools connected with plant processing. Some of the specimens had other functions as well. The function of the specimen in Group 98 is uncertain. The degree of force would tend to indicate use of the stone as an anvil, but the material to which force was being applied cannot adequately be determined. The specimens in Groups 100 and 101 indicate a variety of grinding functions. They differ significantly from Group 92 and do not appear to be connected with plant processing. Specimen 100:a is a small basin-shaped, metate-like tool. It appears to have been used on dense materials. The specimens in Group 101 exhibit flat surfaces and also appear to have been utilized against dense materials. Specimen 100:a appears to have been used to grind small, dense objects (e.g. hematite) and the specimens in Group 101 were utilized to grind larger, dense objects (e.g. ground stone tools).

End battered cobbles (Group 92) appears to be a multifunctional category. Specimens range in size from small to medium. Large cobbles are absent. Wear ranges from light edge crushing to heavy edge crushing and edge shattering. Most of the specimens are characterized by only light edge crushing and appear to have wear similar to the wear on the faces of specimens in Group 90. Some of the specimens may be part of plant procesing as well. The specimens in Group 97 are chert cores which were subsequently utilized as hammerstones. All of these specimens exhibit relatively heavy wear. Wear is characterized by edge crushing. Specimens exhibit a heavier degree of edge shattering than Group 92 and the specimens appear to have been utilized in direct contact with dense materials. The specimens may have been part of the chert reduction process.

The specimen in Group 104 appears to have been utilized as a chopper. The reasons for the initial attempts to alter the margins by flake removal is unknown. These may have been initial attempts to shape the cobble to another tool, and when failure occurred in the flaking, the cobble was subsequently utilized as a chopper. Hematite was used for a variety of purposes. Two specimens (117:a and 117:b) appear to have had flakes removed as part of a tool-shaping process. The other two chipped specimens (117:c and 117:d) are irregular and the reason for chipping is unknown. A single ground specimen is an irregular faceted specimen and appears to have been ground for pigment. The three hematite flakes with ground faces appear to have been removed from completed tools. The agent for removal is unknown. They may have been removed through usage or in an attempt to resharpen tools. The ground and chipped specimen was chipped bificially-bilaterally but does not appear to have been part of a tool-shaping process. The grinding on the surface was probably incidental. Hematite flakes are part of a tool-shaping process or simply for cortex removal. The remainder of the hematite specimens were either unintentionally modified or are not modified.

The ceramics are somewhat ubiquitous. Ceramic paste, temper, and surface finish of ceramics appear to be most similar to Weaver wares from 23MC65 (Grantham 1979). The sample of sherds with surface finish intact is relatively small. In addition, decorative motifs characterizing Weaver wares are absent on rims and necks. There are no near-rim sherds in this sample. Based on the temper and surface finish the specimens would appear, however, to fit into Weaver wares and a late Middle Woodland/early Late Woodland chronological position appears probable. The specimens in Ceramics Two are even more ubiquitous. The percentage of temper by volume is considerably higher than most Weaver wares recovered in the area. The highly eroded condition of the sherds, however, leaves little to be said about them. The fired clay in Group 133 appear largely to be the result of the burned tree casts of Features 1 and 2.

Fire-cracked rock matches closely with the rock samples from the river at the northern edge of the site. Flint Hill sandstone is present in only very slightly higher proportions than in the rock sample and is not particularly meaningful. Except for the obvious selection of stone types for tools, there was little or no cultural selectivity of stone for use as heat-retaining materials.

The feature record in the excavations is particularly interesting. Feature 5 is a familiar feature type in the area. The feature was apparently a dome-shaped, shallow earth oven. Construction differs from other such features (cf. Feature 1, 23MC58 - Grantham 1979) in several respects. This feature, like the one at 23MC58, appears not to have been opened. The feature differs in that charcoal consists mainly of small branches and twigs and are present on, in, and under the fire-cracked rock. The feature is also considerably smaller than other similar features. The feature also does not contain projectile points as is often the case in the area. Thus, the nature of construction differs slightly, and the size of the pit is considererably smaller. The nature of the materials being cooked is uncertain. Features 3, 4, and 6 also are different from other features as well. Features are small and conical with a large quantity of ash and charcoal. Charcoal consists largely of twigs and small branches. This would have produced a small, hot fire but of relatively short duration. The function of the features is unknown.

In summary, the site appears to have several components including Early/Middle Archaic, Late Archaic, and Woodland components. The later components and the later part of the Early/Middle Archaic is distrubed and contained within the plowzone. The Early/Middle component appears to have been the most intense occupation and is considerably greater in depth. Most of the features appear to date from this component, as the point of origin of the pits is below the plowzone. Charcoal samples were collected for radiocarbon assey. Unfortunately insufficient funds were available to run these samples. The site appears largely to be a fall seasonal site. The number of ground and pecked stone tools constitutes two-thirds of the morphologically recognizable tools. Most of these appear to have been connected with plant processing. Features indicate cooking activities, but Feature 5 is smaller than most shallow earth ovens and differs somewhat in construction. The other features are of unknown function, but all are heat-related.

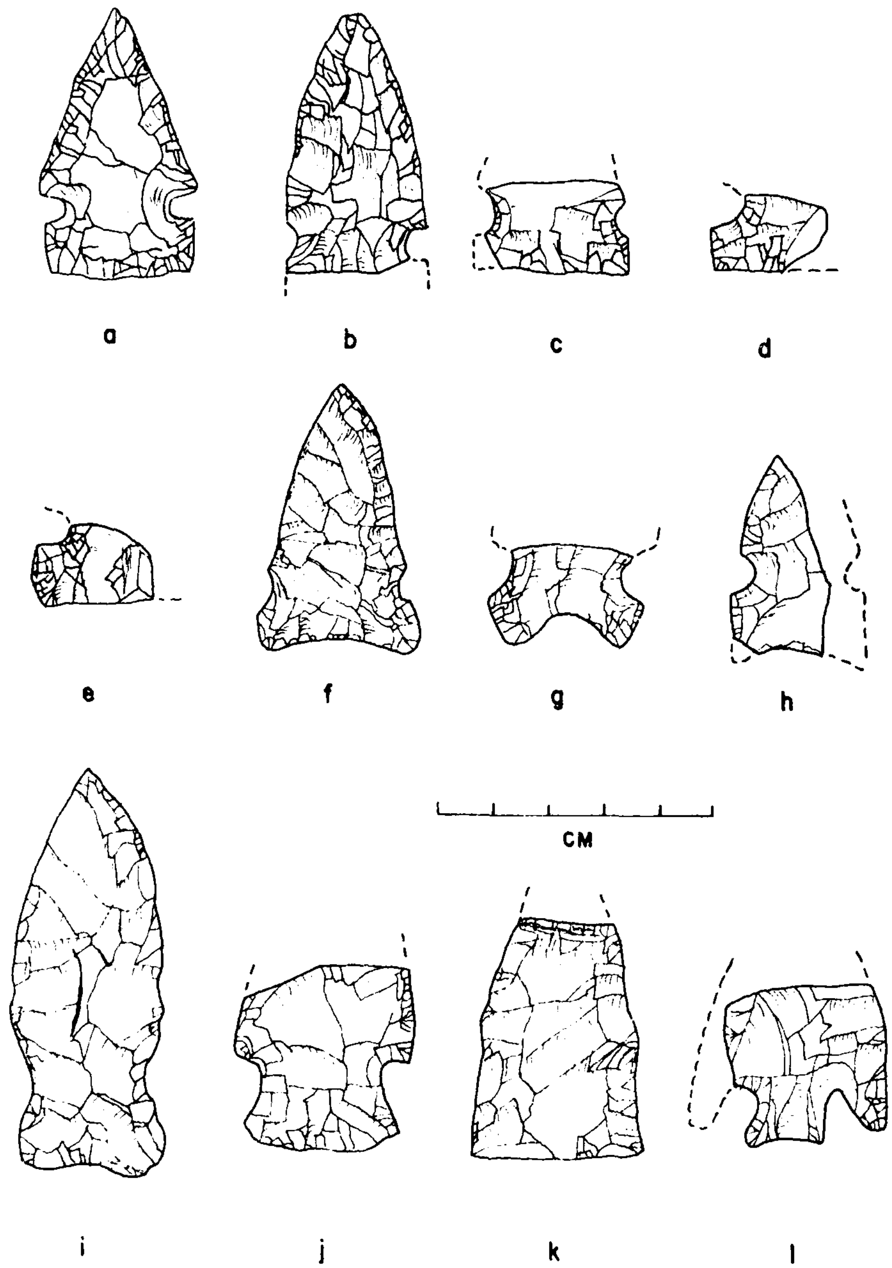


Figure 16. 23MC55 Artifacts. Projectile Points (a-c) Group 11, (f-i) Group 12, (j) Group 13, (k) Group 3, (l) Group 18.

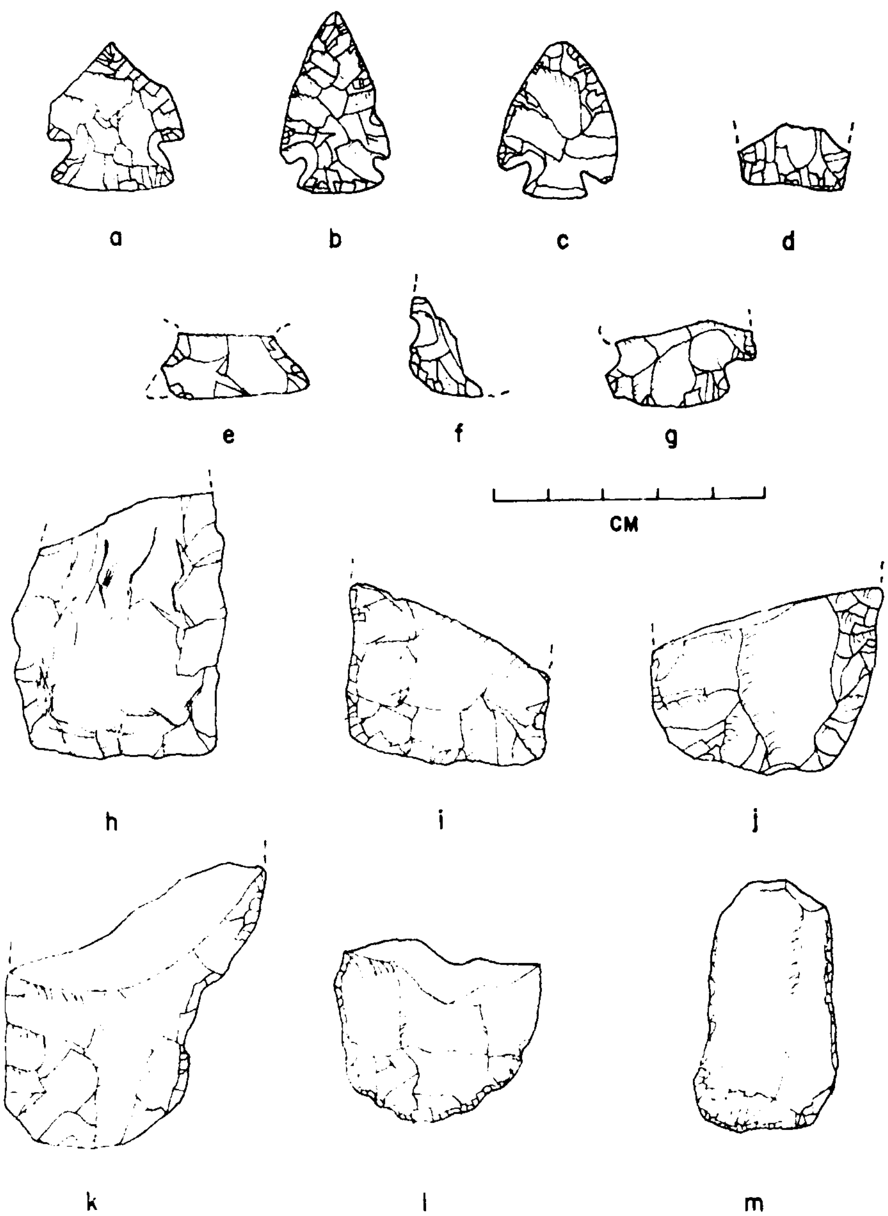


Figure 17. 23MC55 Artifacts. Projectile Points. (a) Group 30, (b) Group 32, (c-d) Group 33, (e-g) Group 45, Bifaces. (h-i) Group 67, (j-k) Group 68, (l) Group 53.

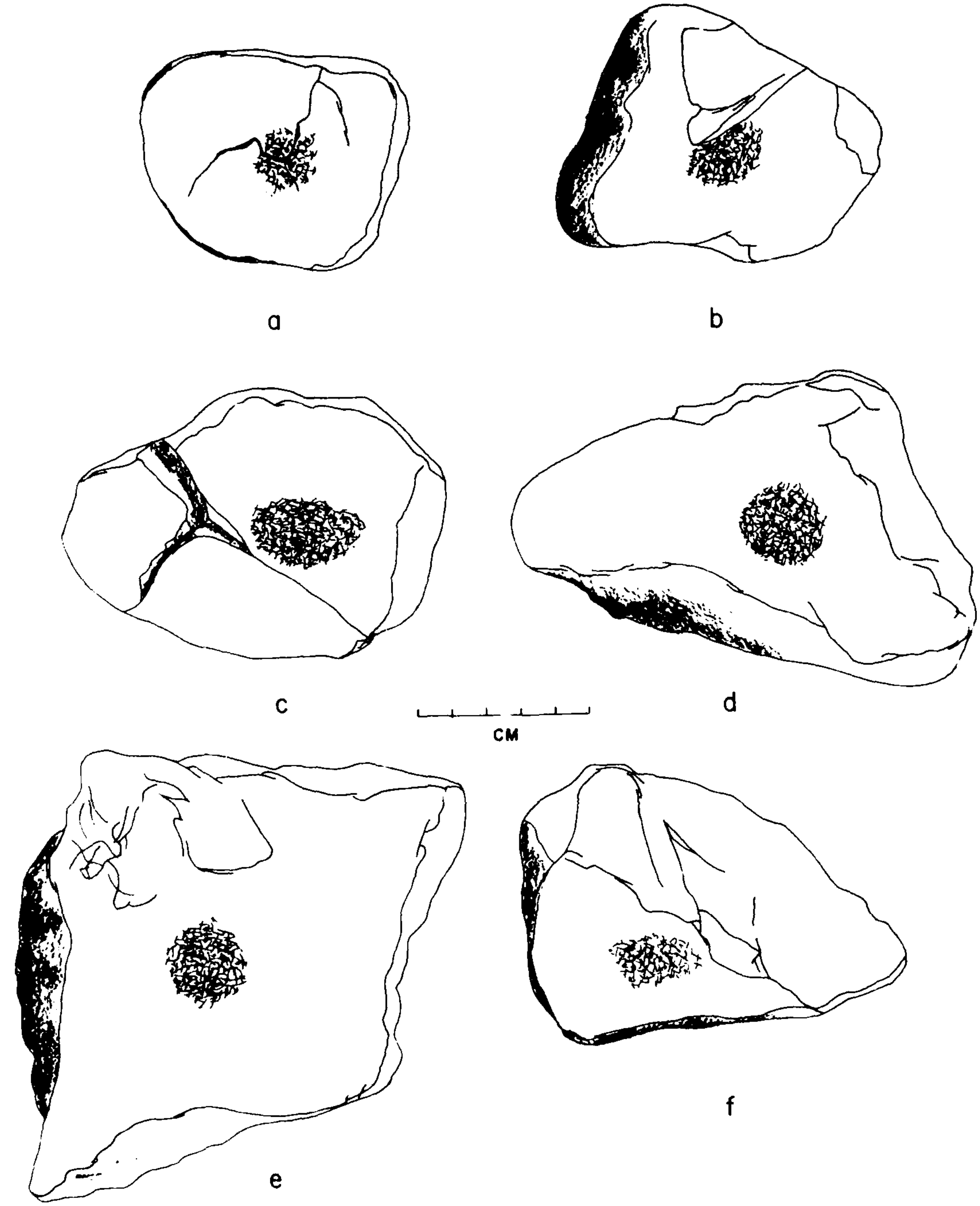


Figure 18. 23MC55 Artifacts. Pecked Stone (a-f) Group 90.

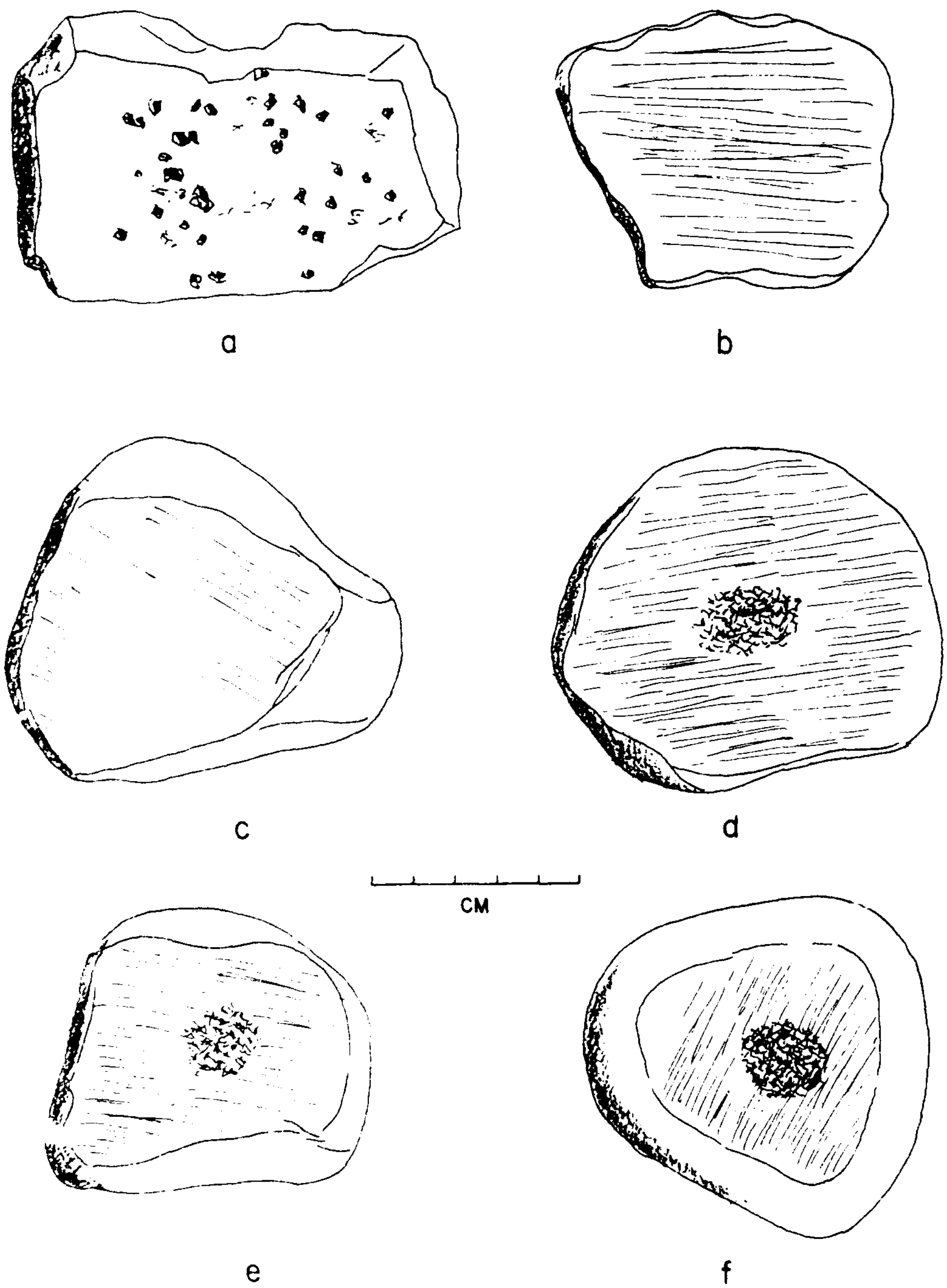


Figure 19. 23MC55 Artifacts. Ground and/or Pecked Stone. (a) Group 98, (b-c) Group 91, (d-f) Group 93.

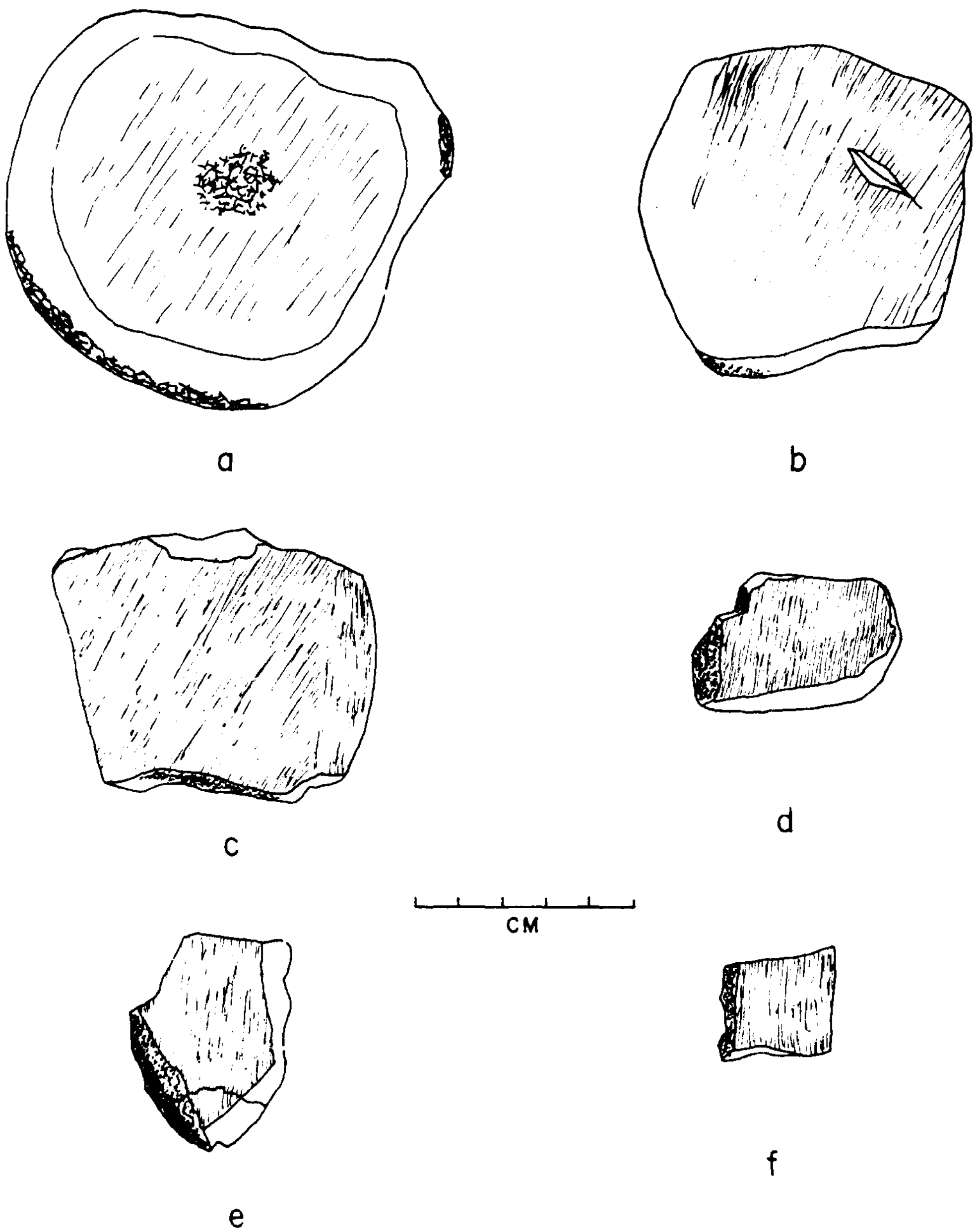


Figure 20. 23MC55 Artifacts. Ground, Pecked, and/or Battered Stone. (a) Group 96, (b) Group 100 (c-f) Group 101.

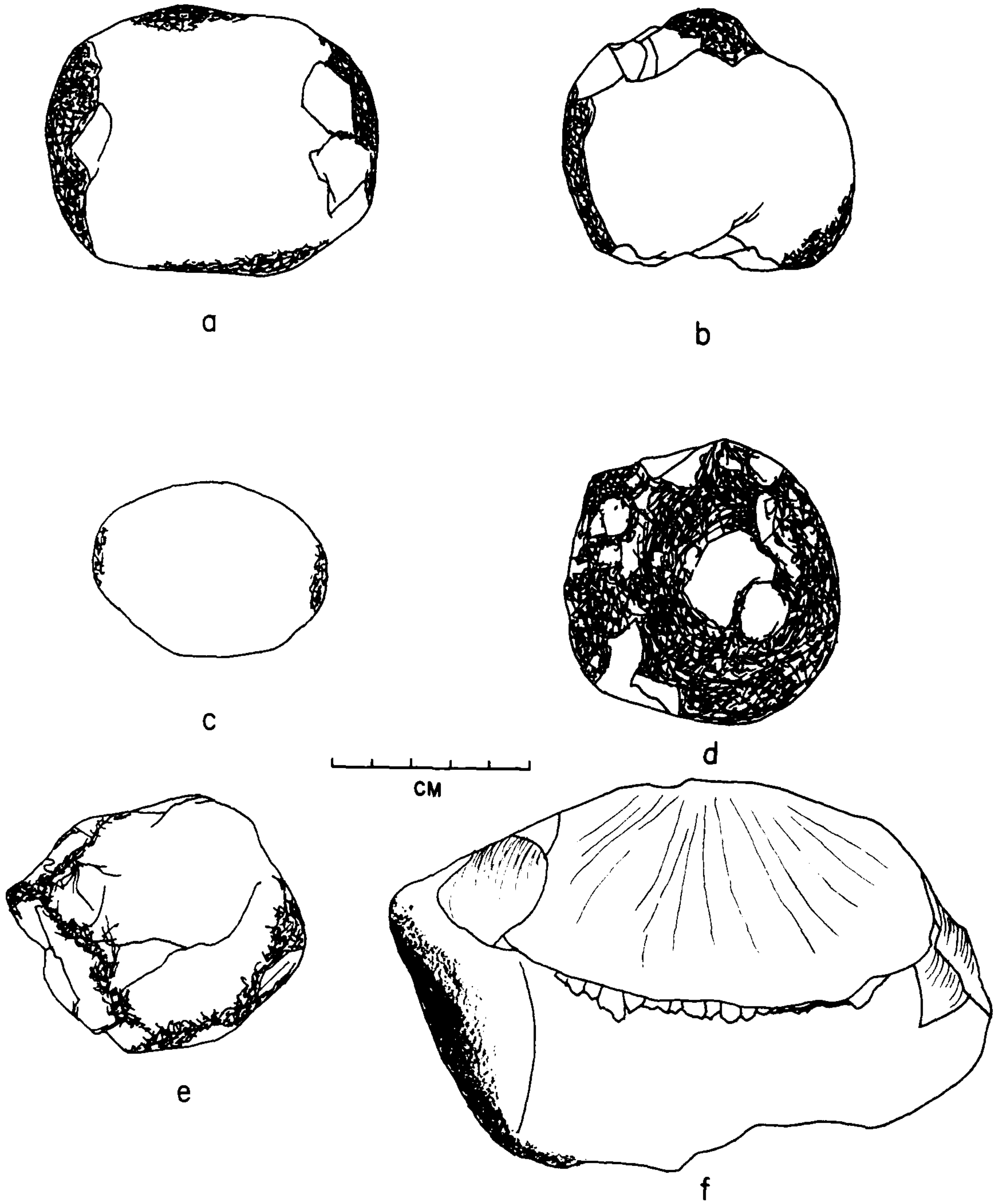


Figure 21. 23MC55 Artifacts. Battered and Chipped Stone. (a-c) Group 92, (d-e) Group 97, (f) Group 104.

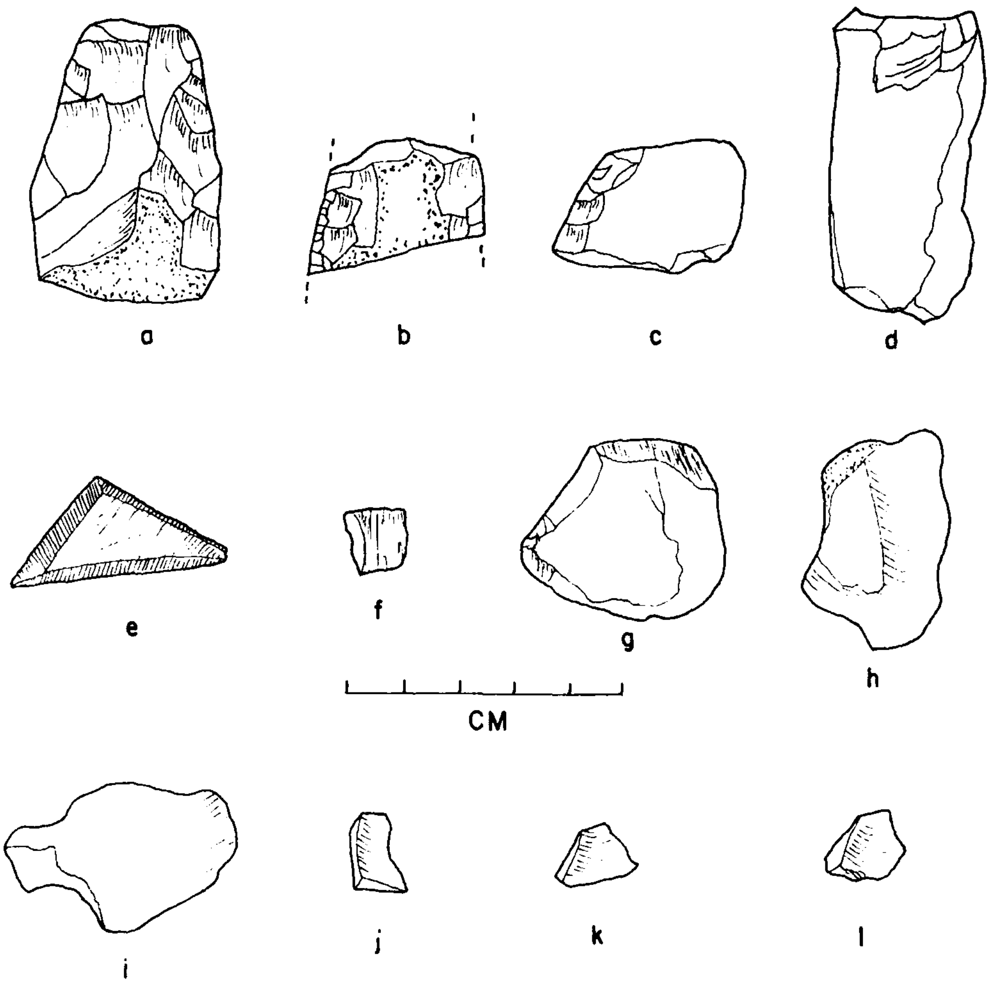


Figure 22. 23MC55 Artifacts. Hematite (a-d) Group 117, (e) Group 118, (f) Group 121, (g) Group 120, (h-l) Group 119.

23MC56

This site is located on the right (west) bank of the East Fork. The site lies on an old till valley fill remnant near the western edge of the uplands. The site was surrounded on the east and south by old meander loops of the river. The river was located along the northern edge of the site and was eroding that slope. The hill was fairly low (ca. 10-15 feet above the level of the flood plain). The elevation of the site was approximately 780-787 feet m.s.l. The site was approximately 250 feet east-west by 350 feet north-south. The site lies approximately 500 feet south of an old dirt section road. The site had been plowed and subplowzone deposits were present. Material density was high.

This site was selected for excavation on the basis of the components present on the site. The site contained Late Woodland and Middle Woodland components in the plowzone. Earlier excavations had indicated that both Late Archaic and Early/Middle Archaic components were present below the plowzone. Information from these excavations and from the survey indicated that the Archaic components present on this site might be substantially different from other such sites in the area.

Sixty-three, one and one-half meter squares were excavated during the 1978 field season (Figure 23). Excavations were laid out in the vicinity of the 1975 excavations since this was one of the few remaining relatively undisturbed parts of the site in the area of the highest artifact density. As the site datum had been destroyed by work under the clearing contract, it was not possible to precisely locate those excavations. Two squares in the present excavation fell entirely within the old excavations and two additional squares contained part of the old excavations. Thus although sixty-five excavation units were laid out, only sixty- three were excavated (Figure 24). The larger excavation unit was 10 1/2 meters north-south by 12 meters east-west. North of the main excavation, a trench six meters east-west by three meters north-south was excavated. A single test square to the east of the latter trench was excavated in an attempt to determine how much this area had been damaged by the clearing contract.

Initially, the plowzone was removed from all of the excavation units. This level varied considerably due to damage to parts of the area under the clearing contract. The depth varied from zero in the southeastern corner of the main block excavation to as great as twenty-five centimeters

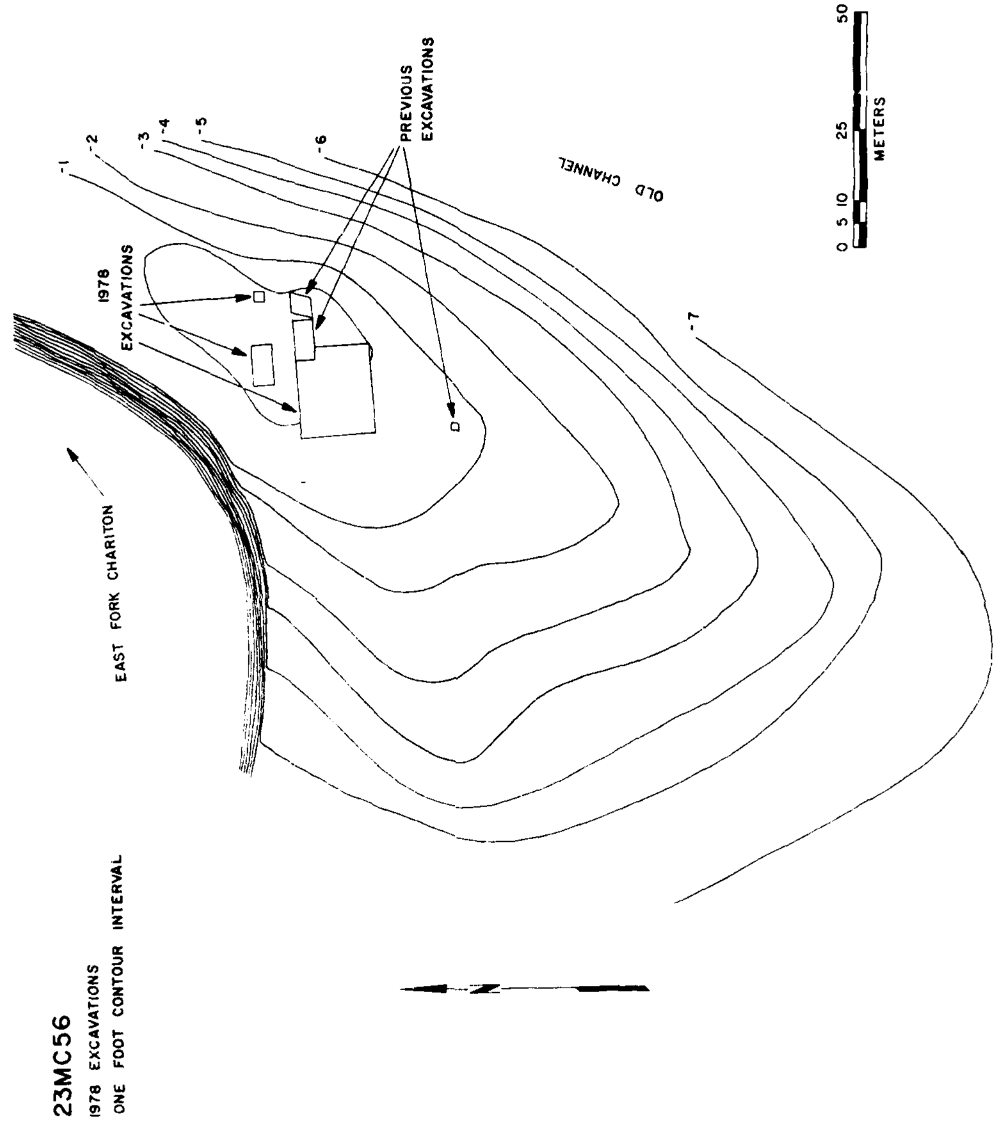


Figure 23. 23MC56. Site Map and Location of Excavations.

in the northern part of the main block excavation. As factors other than natural or cultural/archaeological processes resulted in this great variation in depth, it was decided that this material would not be utilized for comparisons of distributional trends. Subplowzone deposits were excavated in arbitrary ten centimeter levels. A total of at least two, ten centimeter levels were excavated in all excavation units below the plowzone. Three and as many as four ten centimeter levels were excavated in some squares where sterile soil had not been reached after only two ten centimeter levels. The total depth ranged from twenty centimeters to as great as sixty-one centimeters below the surface.

No cultural stratigraphy with clear horizons was noted in the excavations, although deposits do appear to exhibit relative cultural stratigraphy. Deposits were fairly uniform throughout. The only physical stratigraphy noted was the result of soil horizonation. An Ap-horizon extended from the surface to a depth of approximately twenty centimeters below the surface. A B1-horizon extended from the base of the plowzone to a depth of approximately forty centimeters below the surface. A B2-horizon extended for an undetermined depth below that point.

Features

Features 1 through 3 were recorded in previous excavations on the site (Grantham 1979). Sixteen additional features were recorded during the present excavations.

Feature 4

This feature was a small, irregular feature located in the southeastern edge of excavation unit 3088 and in the western edge of excavation unit 3223. The feature was roughly conical in vertical cross-section. The feature was roughly oval in horizontal cross-section, with the longest axis northwest-southeast. The longest axis was 38 centimeters with the width 27.3 centimeters. The greatest depth of the feature was 14.2 centimeters and occurred near the southeastern corner of the feature. The feature exhibited a sharp outline and was readily discernible due to the higher amount of decayed organics and charcoal than the surrounding soil. Associated material included small unidentifiable pieces of wood charcoal and a small amount of chert waste.

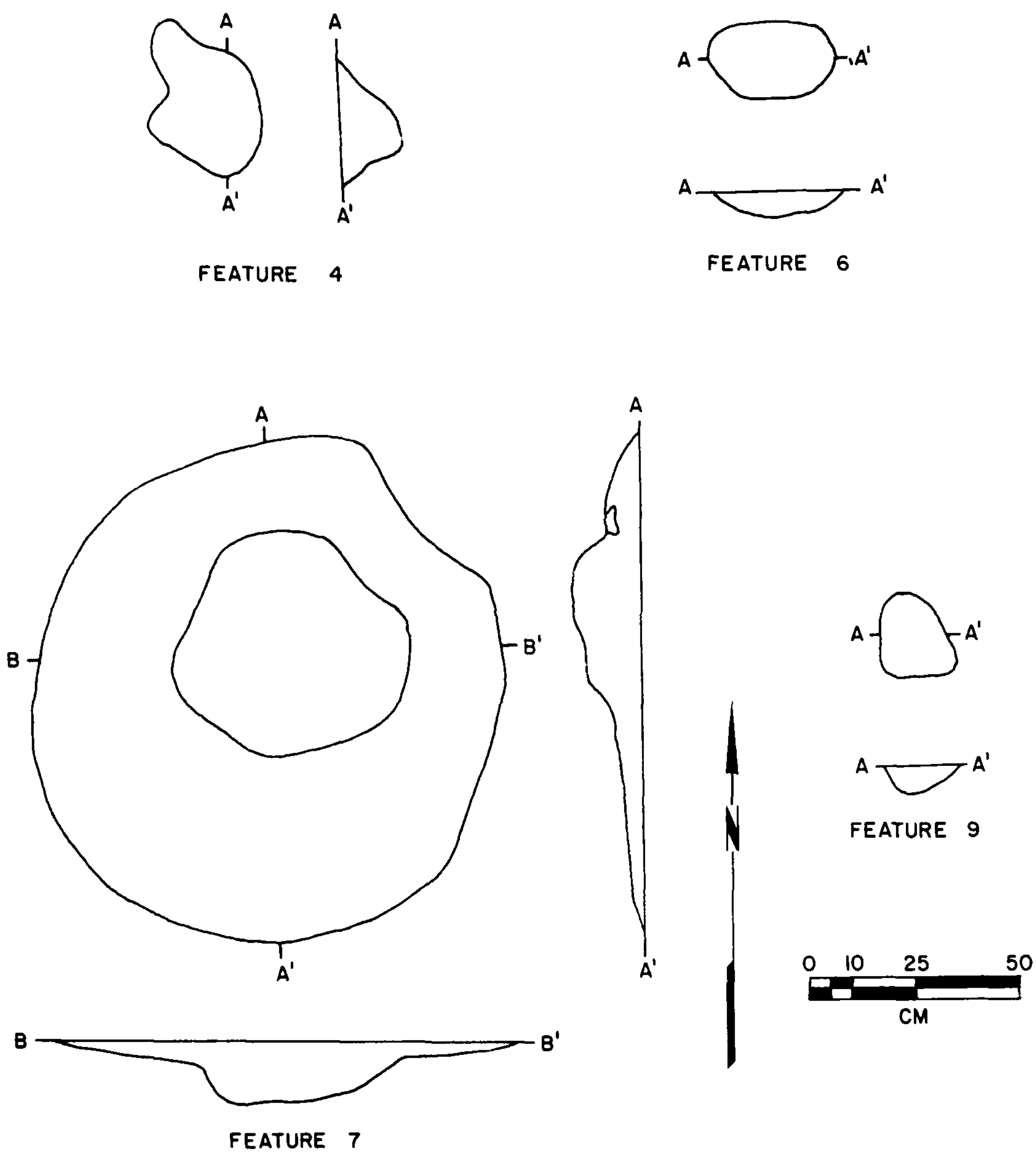


Figure 24. 23MC56. Features 4, 6, 7, and 9 - Horizontal and Vertical Profiles.

Feature 5

Feature 5 was a cache of ground and pecked stone tools located in the eastern central portion of excavation unit 5016. There was no definable pit outline. All three of the tools are argillite cobbles. Two of the specimens are ground stone and the third specimen was a pecked stone. There are four other ground, pecked, or battered tools in close association. There are two pecked stones (one argillite cobble and one dolerite cobble) on either side of the feature, one chert core hammerstone, and one argillite ground and battered cobble. The three tools forming the cache were slightly on edge with the lower ends toward the north at approximately a thirty degree angle. All three specimens rest on each other.

Feature 6

Feature 6 was a small oval pit in the western portion of excavation unit 5018. The feature was roughly basin-shaped in vertical cross-section. The longest axis was roughly east-west and was 30.5 centimeters in greatest length. The width of the feature was 8.1 centimeters. The greatest depth of the feature was 3.3 centimeters near the center of the feature. The feature was not sharply defined. The distinguishing characteristic was a higher amount of decayed organics and wood charcoal than the surrounding soil. Associated material included pottery, fire-cracked rock, and a small amount of chert waste. Charcoal was wood charcoal. Specimens were small and not identifiable to genus.

Feature 7

Feature 7 was a large, complex feature in the western portion of excavation unit 5032 and extends into the eastern edge of excavation unit 5025. The feature consisted of a broad, shallow, basin-shaped pit with a deeper conical pit near the center of the feature. The larger portion of the feature was roughly circular, averaging 114.8 centimeters in diameter. The greatest depth of the shallower portion of the feature was 7.4 centimeters outside of the conical portion of the feature. The central portion of the feature was also roughly circular, averaging 50.7 centimeters in diameter. The greatest depth of the conical portion of the feature was 19.1 centimeters. Feature outlines were sharp where readily detectable. Pit outlines in the larger portion of the feature were not as sharp but were readily detectable due to the large amount of charred nut shells.

The deeper part of the feature contained a very sharp outline. The feature contained large, dense quantities of charred nut shells, woodash, decayed organics, burned clay, chert waste, and a small amount of fire-cracked rock. Identified charred nut shells are principally hickory (Carya sp.) and black walnut (Juglans nigra). Hazel (Corylus sp.) makes up a small percentage of the total identifiable shell fragments.

Feature 8

This feature was a very large and very complex feature encompassing the southeastern corner of excavation unit 5038, the eastern halves of excavation units 5039 and 5040, the northeastern corner of excavation unit 5041, the southern half of excavation unit 5045, all of excavation units 5046 and 5047, the northern portion of excavation units 5048, the southern half of excavation unit 5052, all of excavation unit 5053, and the northwestern half of excavation unit 5054. This feature contained or was associated with a number of smaller feature units. The entire area is delineated by a higher amount of decayed organics, charcoal, and burned earth. The outline of the entire feature ranges from sharp to diffuse. The feature contains a heavily burned area containing fairly large quantities of charcoal. The latter area was designated Feature 8, Prime. The feature also contains eight smaller features with one additional feature in immediate association. These nine features contain large quantities of charcoal and dense organics that contrast sharply with the rest of the feature. These were designated Feature 8,a through Feature 8,i. The entire area of Feature 8 was not contained within the excavation but extends for an undetermined distance to the east. The entire feature is roughly 4.3 meters north-south and greater than 3.68 meters west-east. Soil discoloration extends approximately ten centimeters below the base of the plowzone. The western edge of the feature has a sharp boundry. The northern and southern edges of the feature are more diffuse. The feature contains a very wide variety of materials and includes ground, pecked, and battered tools, chert tools, fire-cracked rock, and a ground hematite axe. It would appear that the feature may represent a structure or living floor.

Feature 8, Prime

This secondary feature is contained within Feature 8. It consists of an area which has been heavily fire

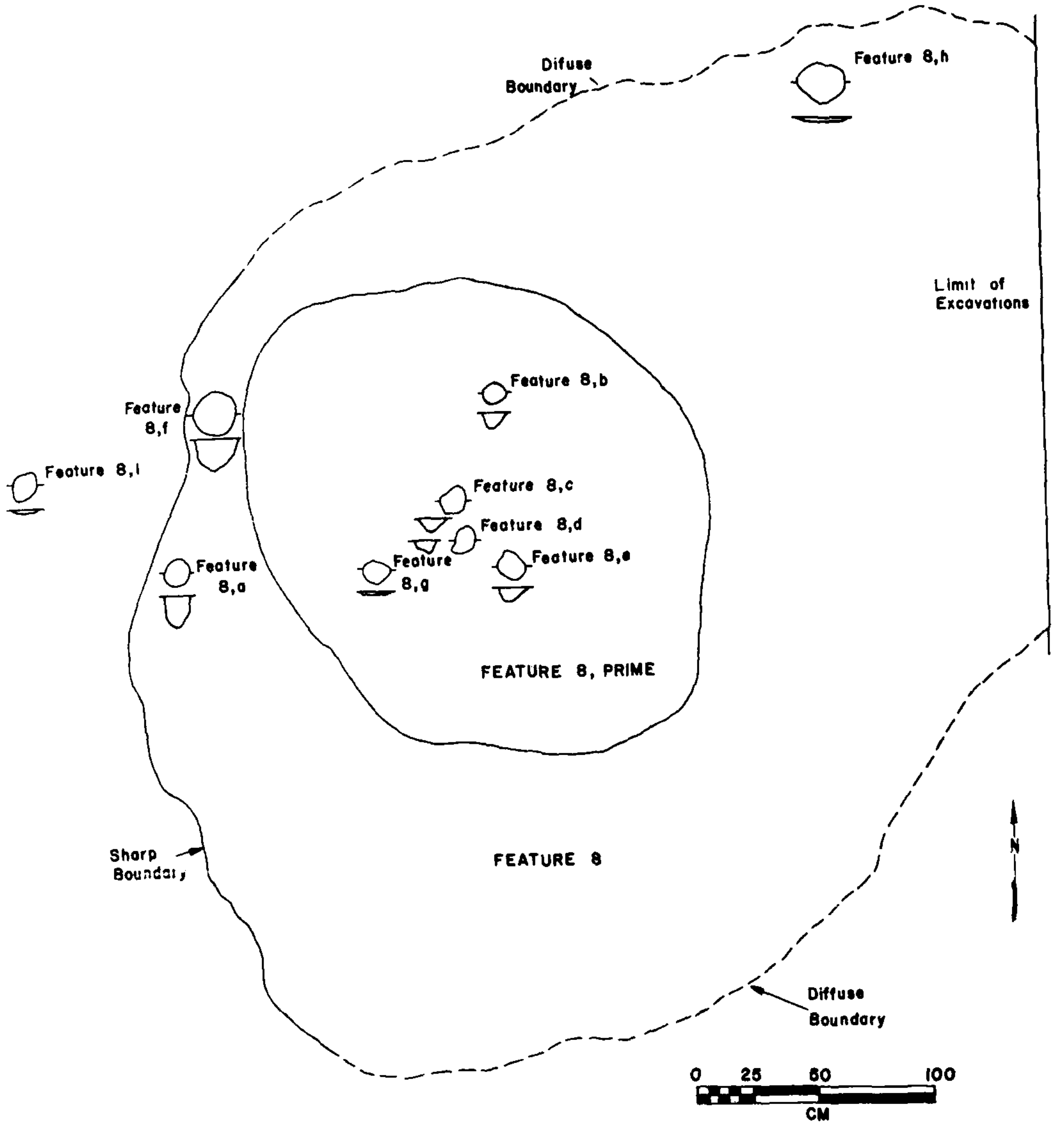


Figure 25. 23MC56. Feature 8 Complex.

discolored to a bright red color. The area also contains a higher amount of wood charcoal than the surrounding part of the feature. The area is roughly circular with a slightly longer axis from northwest to southeast, 2.17 meters in length. The width is 1.67 meters. The intensity of burning and depth of discoloration is greater. Discolored soil extends 25.7 centimeters below the base of the plowzone. Edges of this more highly discolored area are sharp to somewhat diffuse. Associated material includes a side-notched projectile point base, a full-grooved hematite axe, biface fragments, hematite, chert waste, fire-cracked rocks, oak (Quercus sp.) charcoal, hickory (Carya sp.) nut shell fragments, and a small amount of unmodified stone.

Feature 8,a

This feature was a small, roughly circular feature in the southeastern quarter of excavation unit 5039. The feature was roughly conical in vertical cross-section. The feature was roughly circular, approximately 9.5 centimeters in diameter. The greatest depth of the feature was 12 centimeters. The feature contained a sharp outline and was readily detectable due to the large amount and large size of wood charcoal and burned earth that the surrounding feature. Associated material included oak (Quercus sp.) wood charcoal and heat discolored soil.

Feature 8,b

This feature was a small, roughly circular feature in the north central portion of excavation unit 5046. The feature was roughly conical in vertical cross-section. The feature was roughly circular. The east-west axis was slightly longer (10 centimeters) than the north-south axis (7.5 centimeters). The greatest depth of the feature was 7 centimeters below the plowzone. The feature exhibited a sharp outline and was readily detectable due to the large amount of wood charcoal and its large size as compared with the surrounding feature materials. Associated material included oak (Quercus sp.) wood charcoal, one piece of fire-cracked rock, and a small amount of chert waste.

Feature 8,c

This feature was a small, roughly circular feature in the central portion of excavation unit 5046. The feature was roughly conical in vertical cross-section. The feature was roughly circular, with the east-west axis slightly longer (11.4 centimeters) than the north-south axis (9.5 centimeters). The greatest depth of the feature was 6.2 centimeters below the plowzone. The feature exhibited a sharp outline and was readily detectable due to the large amount and large size of wood charcoal as compared with the surrounding feature materials. Associated material included oak (Quercus sp.) wood charcoal and a small amount of burned earth.

Feature 8,d

This feature was a small, roughly circular feature in the south central portion of excavation unit 5046 and between Features 8,c and 8,e. The feature was roughly conical in vertical cross-section. The feature was roughly circular, with the north-south axis slightly longer (11.3 centimeters) than the east-west axis (10 centimeters). The greatest depth of the feature was 6.4 centimeters below the plowzone. The feature exhibited a sharp outline and was readily detectable due to the large amount and large size of wood charcoal as compared with the surrounding feature materials. Associated material included oak (Quercus sp.) wood charcoal and a small amount of burned earth.

Feature 8,e

This feature was a small, roughly circular feature in the south central portion of excavation unit 5046. The feature was roughly conical in vertical cross-section. The feature was roughly circular with a slightly longer axis running northwest-southwest (11.4 centimeters) than the width (9.8 centimeters). The greatest depth of the feature was 6.4 centimeters below the base of the plowzone. The feature was readily detectable due to the large amount and size of wood charcoal as compared with the surrounding feature materials. Associated material included oak (Quercus sp.) wood charcoal, one piece of fire-cracked rock, and a small amount of burned earth.

Feature 8,f

This feature was a small, circular feature in the eastern portion of excavation unit 5039. The feature was roughly conical in vertical cross-section. The feature was circular, 17.8 centimeters in diameter. The greatest depth of the feature was 13.8 centimeters. The feature lies within Feature 8 but outside Feature 8, Prime. The feature was readily detectable due to the large amount of wood charcoal present in the feature as compared with the surrounding feature material. Associated material included unidentifiable wood charcoal, a small amount of chert waste, and a small amount of glacial gravel.

Feature 8,g

This feature was a small, roughly circular feature in the southwestern portion of excavation unit 5046. The feature was roughly conical in vertical cross-section. The feature was roughly circular varying from 9 to 10 centimeters. The greatest depth of the feature was 2.8 centimeters below the base of the plowzone. The feature was readily detectable due to the large amount and size of the wood charcoal as compared with the surrounding feature materials. Associated material included oak (*Quercus* sp.) wood charcoal only.

Feature 8,h

This feature was a small, roughly oval feature in the central portion of excavation unit 5052. The feature was slightly conical in vertical cross-section. The feature was slightly oval with the longest axis east-west. The longest axis was 20.3 centimeters and the width was 15.2 centimeters. The greatest depth was 3.8 centimeters. The feature was located near the northern edge of Feature 8. The feature lacked sharp outlines. The feature was, however, readily detectable by the great amount of wood charcoal and burned earth. Associated material included small unidentifiable pieces of wood charcoal and burned earth.

Feature 8,i

Feature 8,i was a small, roughly circular feature in the western portion of excavation unit 5039. The feature was located outside Feature 8 but was near Feature 8. It appeared quite similar to the features within Feature 8 and appeared to be associated with it. The feature was slightly conical in vertical cross-section. The feature was roughly circular with the north-south axis slightly longer (11.5 centimeters) than the east-west axis (10.2 centimeters). The greatest depth of the feature was 2.3 centimeters. The feature exhibited relatively sharp outlines and was easily distinguished by the large amount and large size of wood charcoal as compared with the surrounding soil. Associated material included oak (*Quercus* sp.) wood charcoal and a single chert flake.

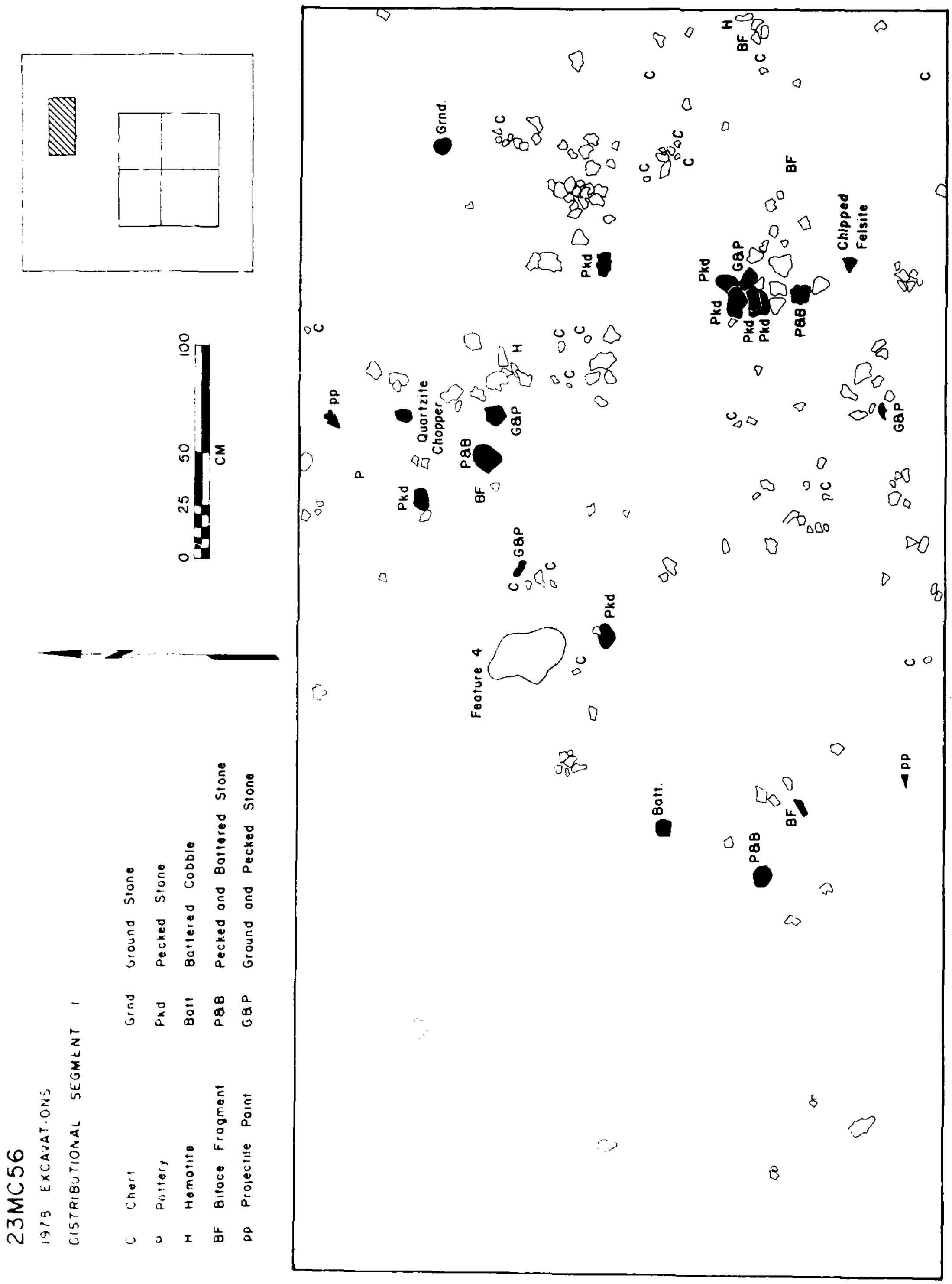


Figure 26. 23MC56. Distributional Map - Segment 1.

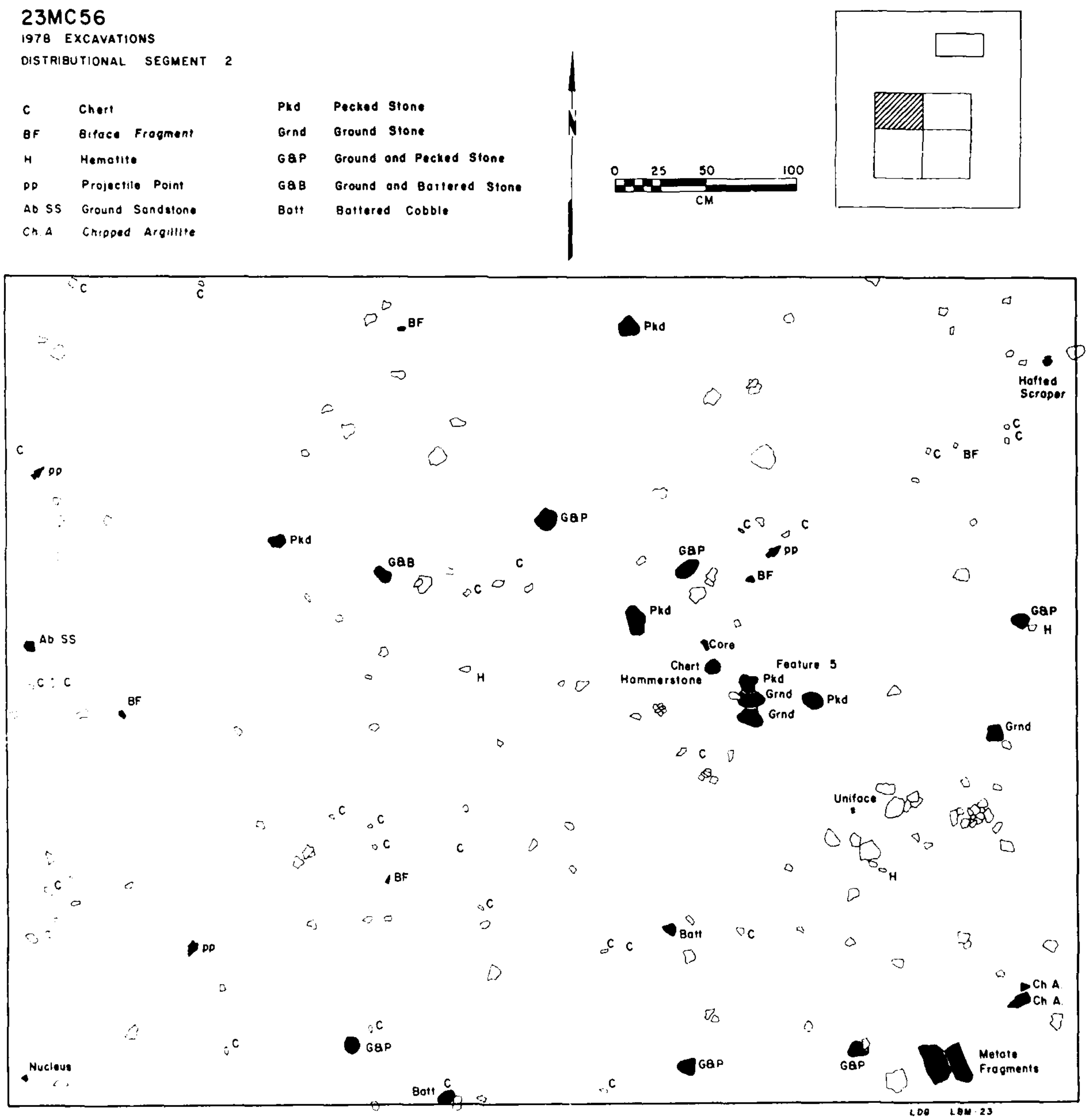


Figure 27. 23MC56. Distributional Map - Segment 2.

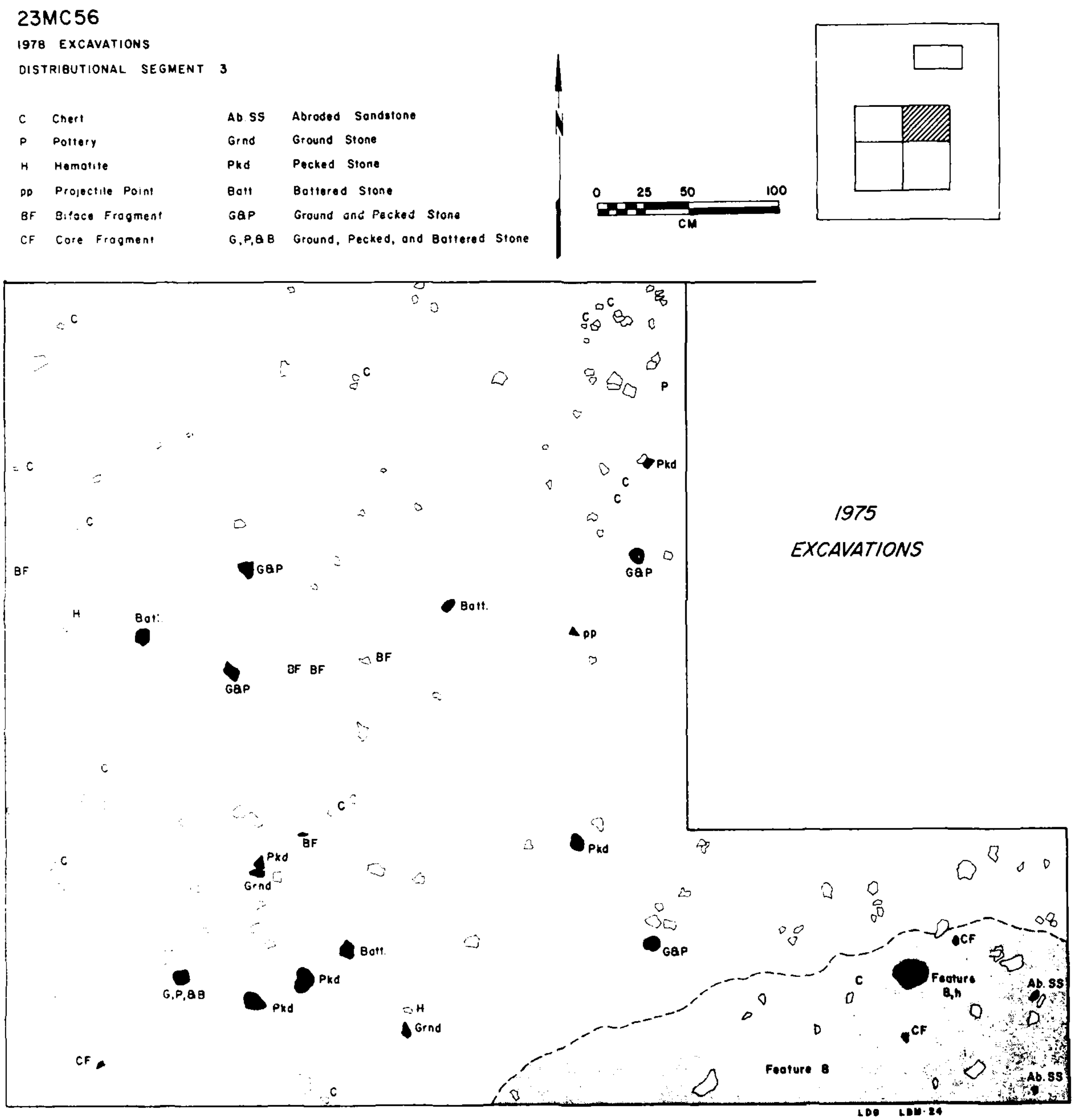


Figure 28. 23MC56. Distributional Map - Segment 3.

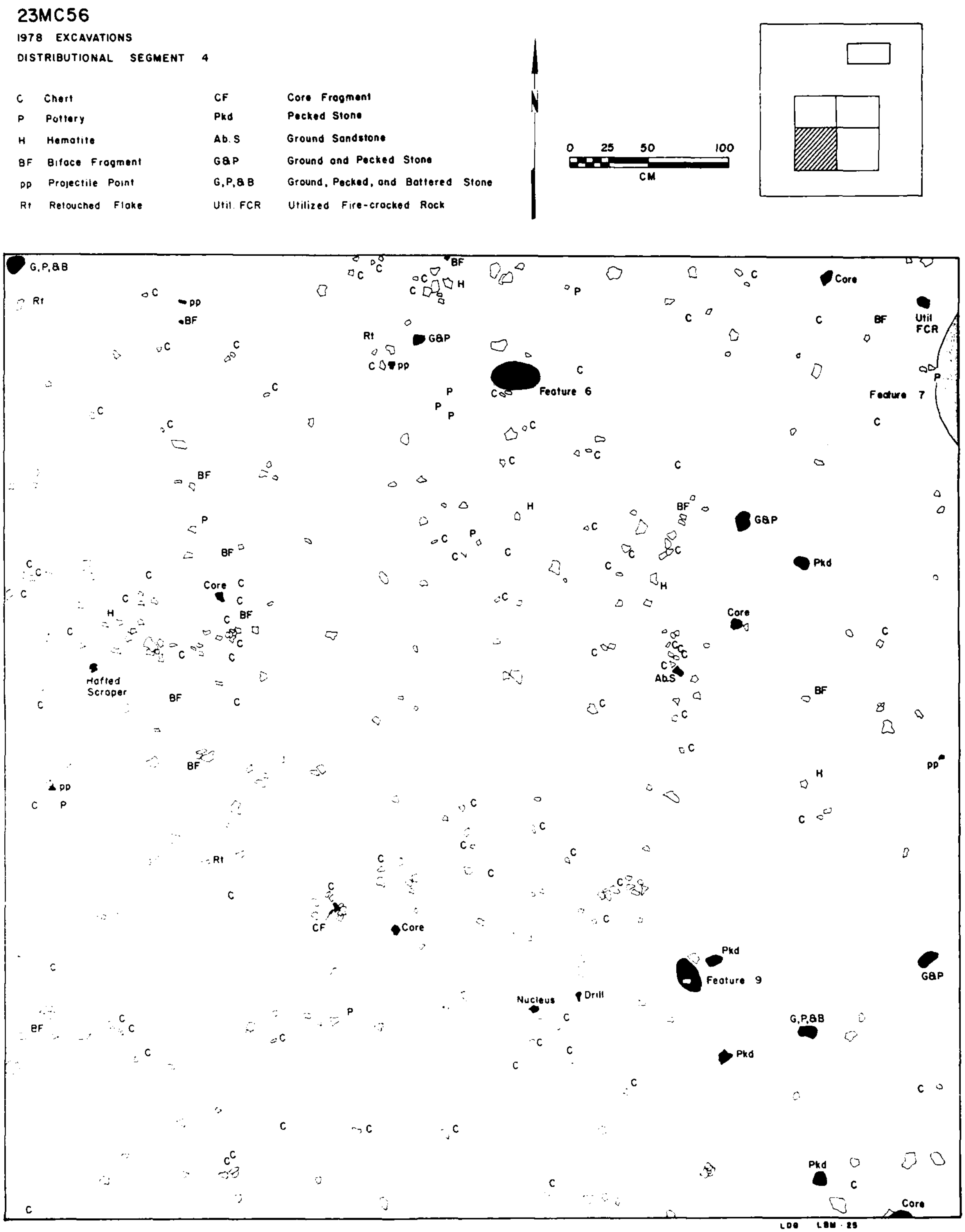


Figure 29. 23MC56. Distributional Map - Segment 4.

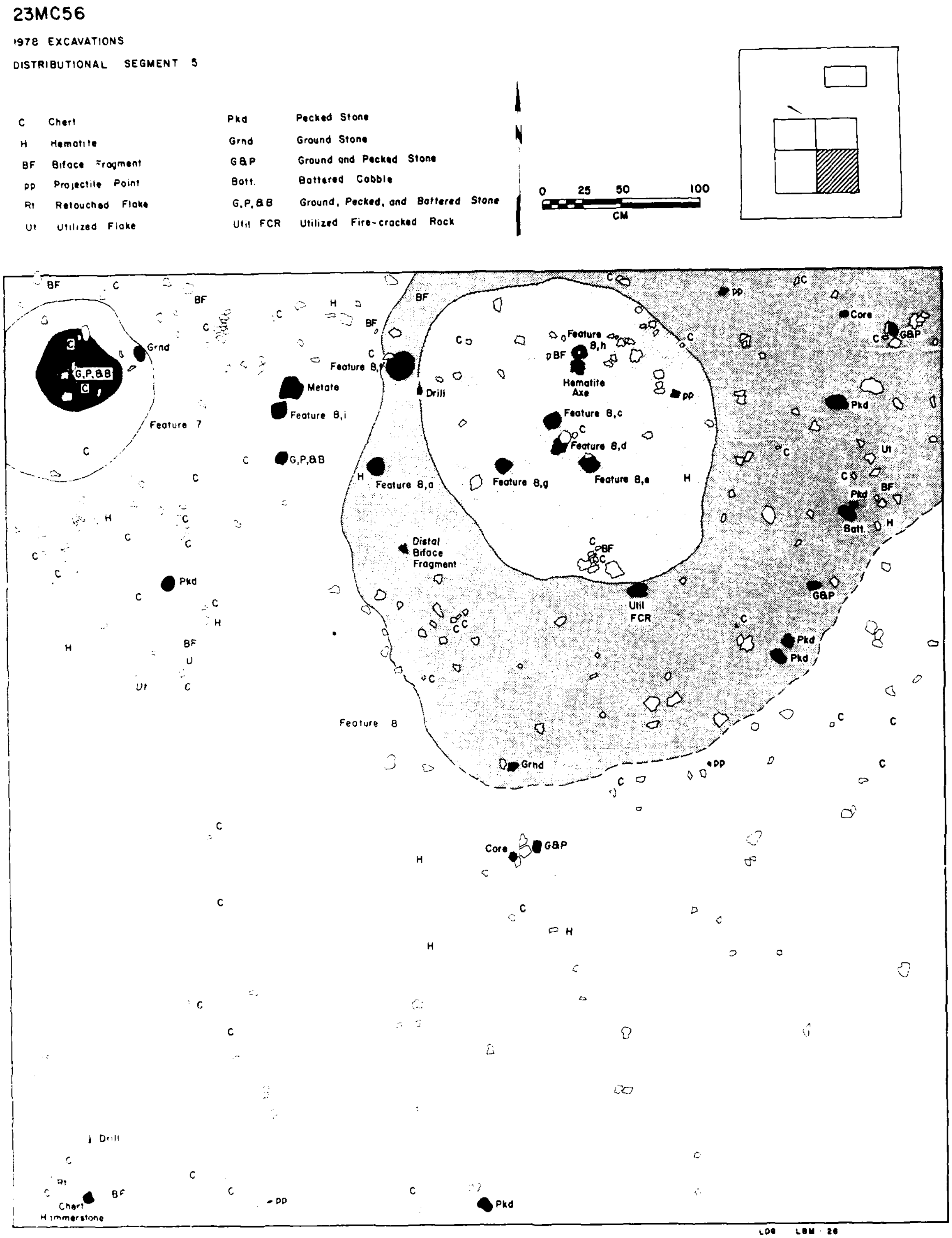


Figure 30. 23MC56. Distributional Map - Segment 5.

Feature 9

Feature 9 was a small oval feature located in the southeast corner of excavation unit 5020 and the northeast corner of excavation unit 5021. The feature was roughly conical in vertical cross-section. The feature was roughly oval with the longest axis north-south. The longest axis was 22 centimeters, and the width was 15.2 centimeters. The greatest depth of the feature was 6.3 centimeters. The feature exhibited a sharp outline and was readily detectable by the greater amount of decayed organics and wood charcoal than the surrounding soil. Associated material included unidentifiable wood charcoal, a small amount of chert waste, fire-cracked rock, and a pecked stone.

Description of Materials

Points

Group 4:a-g Straight-based, Very Slightly Expanding-stemmed Points - 7 proximal fragments (Figure 33, e-k)

The specimens in this category exhibit straight bases, sharp stem-base junctures, very slightly expanding stems, weakly abrupt shoulders, straight lateral margins, and bi-convex cross-sections. Chipping pattern consists of primary percussion and secondary percussion and pressure flaking. Primary flake scars are large, expanding, uneven in size, and inconsistent in distribution. Secondary flake scars are medium to large, expanding, uneven in size, and inconsistent in distribution. Secondary flake scars are medium to large, expanding, uneven in size, and inconsistent in distribution. Only one specimen is complete enough to tell if tertiary flaking is present, and it lacks tertiary flaking. Blank material is difficult to determine but appears to have passed through a preform stage as evidenced by the islands of primary flaking. Specimen 4:a exhibits a compound transverse stress fracture. Specimens 4:b through 4:d exhibit transverse stress fractures. Specimen 4:f exhibits a transverse stress fracture and a longitudinal stress fracture. Specimen 4:g exhibits a transverse stress fracture and a compound longitudinal fracture. Specimen 4:a exhibits flake scar edge polish and rounding on both faces. Specimens 4:d and 4:g are fire-blackened.

Group 5:a Long, Narrow, Expanding-stemmed Point - 1
(Figure 34, d)

The specimen in this category exhibits a straight base, narrow expanding stem, abrupt shoulders, and bi-convex cross-section. The chipping pattern consists of secondary percussion flaking. Primary flaking, if present, has been obscured by later flaking. Secondary flake scars are small to large, generally expanding, uneven in size, and inconsistent in distribution. Blank material is difficult to determine but probably passed through a preform stage based on the thickness of the specimen and the flaking pattern.

Group 9:a-n Square-stemmed Points - 3, 11 proximal fragments
(Figure 32, c-l; Figure 33, a-d)

The specimens in this category exhibit straight bases, square stem-base junctures, straight stems, abrupt shoulders, straight to convex lateral margins and bi-convex cross-sections. Specimens exhibit primary percussion and secondary and tertiary pressure flaking. Primary flake scars have largely been obscured by later flaking. Secondary flake scars are medium, generally expanding, uneven in size, and inconsistent in distribution. Tertiary flake scars are detectable only on specimen 9:c. Tertiary flake scars are small, lamellar, fairly even in size, and inconsistent in distribution. Resharpening is bifacial-bilateral, and lacks beveling. Blank material is difficult to determine but appears to have passed through a preform stage as evidenced by traces of islands of primary flake scars. None of the specimens exhibit basal thinning. Specimens 9:a, 9:b and 9:c are complete. Specimens 9:i through 9:m exhibit transverse stress fractures. Specimen 9:h exhibits an oblique stress fracture. Specimen 9:d exhibits a thermal fracture. Specimen 9:e exhibits a percussion fracture from one lateral margin, removing one face. Specimen 9:f exhibits a lateral transverse stress fracture. Specimen 9:g exhibits a transverse stress fracture and a percussion fracture from one stem margin. Specimen 9:e was fractured in such a way that a sharp flake edge remained after fracture, and this was secondarily utilized.

Group 11:a-d Straight-base, Side-notched Points - 1,3
proximal fragments (Figure 31, c-f)

The specimens in this category vary considerably morphologically. They all exhibit straight bases, sharp stem-base junctures, shallow to deep side notches, straight lateral margins, and bi-convex cross-sections. The chipping pattern consists of primary percussion and secondary and tertiary pressure flaking. Primary flake scars are large, expanding, uneven in size, and inconsistent in distribution. Secondary flake scars are small to medium, lamellar to expanding, uneven in size, and inconsistent in distribution. Only specimen 11:b exhibits tertiary flake scars. Tertiary flake scars on the specimen obscure much of the earlier flaking. Tertiary flake scars are small, lamellar, fairly even in size, and fairly consistent in distribution. Resharpening is bifacial-bilateral, and the specimen lacks beveling. Specimen 11:c is larger than the other specimens and may not have been a projectile point. The specimen lacks careful secondary flaking. Blank material is difficult to determine, but probably passed through a preform stage as evidenced by islands of primary flaking on both faces. There is some basal thinning on specimen 11:a. Specimen 11:b is complete. Specimens 11:a, 11:c, and 11:d exhibit transverse stress fractures. Notches are created by the removal of multiple pressure flakes. Final notch flakes originate from the same face on specimens 11:a and 11:b, and from alternate faces on specimens 11:c and 11:d.

Group 12:a-f Concave-based, Side-notched Points - 1, 5 proximal fragments (Figure 31, g-l)

The specimens in this category exhibit concave bases, sharp, square stem-base junctures, medium to broad deep side notches, convex lateral margins, and bi-convex cross-sections. Specimen 12:b and 12:c are medium in size, while specimens 12:a, 12:d, 12:e, and 12:f are large in size. The chipping pattern consists of primary percussion flaking and secondary and tertiary pressure flaking. Specimens 12:b and 12:c lack any remaining evidence of primary flaking. Primary flake scars on the other specimens are large, generally expanding, uneven in size, and inconsistent in distribuiton. Secondary flake scars are medium to large, lamellar to expanding, uneven in size, and inconsistent in distribution. Only specimen 12:a is complete enough to know if tertiary flaking were present. Tertiary flake scars on this specimen are small, lamellar to expanding, fairly even in size, and inconsistent in distribution. Resharpening on the specimen is bifacial-bilateral, and it lacks beveling. Blank material is difficult to determine but appears to have passed through a preform stage as evidenced by the islands of primary flake scars on the specimens. Specimen 12:a is complete. Specimens 12:b, 12:c, 12:d and 12:f exhibit transverse stress fractures. Specimen 12:e exhibits a compound transverse fracture. Notches were created by the removal of multiple pressure flakes, and final notch flakes originate from alternate faces on one specimen; from the same face on three specimens; and undetermined on two specimens.

Group 14:a Lobed-based Point - 1 (Figure 31, b)

The specimen in this category exhibits an incurvate-excurvate base, rounded stem-base juncture, a slightly expanding stem, slightly oblique shoulders, convex lateral margins, and a bi-convex cross-section. The specimen exhibits secondary and tertiary pressure flaking. The specimen may have been worked by primary percussion flaking but, if present, has been completely obscured by later flaking. Secondary flake scars are small to medium, generally expanding, uneven in size, and inconsistent in distribution. Resharpening has resulted in tertiary flake scars which are small, lamellar, fairly even in size, and very consistent in distribution. Resharpening is bifacial-bilateral, and the specimen lacks beveling. The specimen exhibits slight basal thinning and lacks basal grinding. The notches were created by the removal of multiple pressure flakes. Final notch flakes originate from alternate faces. Blank material is difficult to determine, but probably passed through a preform stage, based on the flaking pattern and the general thickness. The specimen is relatively complete and exhibits only a longitudinal fracture which removed one shoulder. The specimen is heavily fire-blackened.

Group 16:a Concave-based, Straight-stemmed Point - 1 (Figure 31, a)

The specimen in this category exhibits a concave base, sharp stem-base juncture, a straight stem, weak shoulder, convex lateral margins, and a bi-convex cross-section. The chipping pattern consists of primary percussion and secondary and tertiary pressure flaking. Primary flake scars have been largely obscured by later flaking. Flake scars are large and expanding. Secondary flake scars are small to medium, lamellar to expanding, uneven in size, and inconsistent in distribution. Tertiary flaking is lamellar, fairly even in size, and inconsistent in distribution. Resharpening is bifacial-bilateral, and the specimen lacks beveling. The specimen had been basally thinned. The specimen had also been basally ground and the stem has been ground up to the shoulders. Blank material is difficult to determine but probably passed through a preform stage as evidenced by the primary flake scars. The specimen exhibits a small impact fracture.

Group 17:a Slightly Concave-based, Lanceolate point - 1 proximal fragment (Figure 32, b)

The specimen in this category exhibits a slightly concave base, sharp stem-base juncture, slightly convex lateral margins, and a bi-convex cross-section. The chipping pattern is impossible to determine. The specimen does not exhibit any primary flaking on the remaining portion. It does exhibit secondary flaking. Secondary flake scars are small to medium, generally lamellar, fairly even in size, and fairly consistent in distribution. The specimen is not complete enough to determine if tertiary flaking was present. It lacks basal grinding but the stem margins are ground. The specimen also exhibits slight basal thinning. It exhibits a compound oblique fracture.

Group 18:a Triangular Point - 1 (Figure 32, a)

The specimen in this category exhibits a slightly convex base, rounded stem-base juncture, traces of shoulders, slightly convex lateral margins, and a bi-convex cross-section. The specimen in this category exhibits primary percussion flaking and secondary and tertiary pressure flaking. Primary flake scars have largely been obscured by later flaking. There is only one small island of primary flaking on one face. Secondary flake scars have also been largely obscured. Flake scars are small to medium, lamellar to expanding, uneven in size, and inconsistent in distribution. Teritary flake scars are abundant. They are small, generally lamellar, fairly even in size, and inconsistent in distribution. Tertiary flaking obscures most of the earlier flaking. Resharpening has removed almost all traces of where the shoulders were originally. Resharpening is unifacial-bilateral and exhibits a slight bevel of approximately thirty degrees. The specimen does not exhibit any basal thinning or basal grinding. Blank material is difficult to determine but appears to have passed through a preform stage as evidenced by the island of primary flaking on one face.

Group 25:a-d Straight-based, Expanding-stemmed Points - 1, 3 proximal fragments (Figure 33, 1; Figure 34, a-c)

The specimens in this category exhibit straight bases, sharp stem-base junctures, expanding stems, weakly abrupt shoulders, straight lateral margins, and bi-convex cross-sections. The chipping pattern consists of primary percussion flaking and secondary and tertiary pressure flaking. Primary flake scars have largely been obscured by later flaking. Flake scars are large and expanding. Secondary flake scars are medium, lamellar to expanding, uneven in size, and inconsistent in distribution. Very little tertiary flaking is on the one complete specimen. Tertiary flake scars are small, lamellar, uneven in size, and inconsistent in distribution. Resharpening is bifacial-bilateral, and the specimen lacks beveling. Blank material is difficult to determine but appears to have passed through a preform stage as evidenced by the islands of primary flaking. The specimen does not exhibit any basal grinding nor any basal thinning. Specimen 25:a exhibits an impact fracture and an oblique stress fracture from the notch through the base. Specimens 25:b and 25:d exhibits transverse stress fractures across the notches. Specimen 25:d exhibits a transverse stress fracture across the notches and a compound longitudinal fracture from that fracture through the base.

Group 26:a-c Convex-based, Slightly Expanding-stemmed Points 1, 2 proximal fragments (Figure 34, e-g)

The specimens in this category exhibit convex bases, slightly rounded stem-base junctures, slightly expanding stems, abrupt shoulders, straight lateral margins, and bi-convex cross-sections. The chipping pattern consists of primary percussion flaking and secondary and tertiary pressure flaking. Primary flake scars are large, expanding, uneven in size, and inconsistent in distribution. Secondary flake scars largely obscure the earlier primary flaking. Flake scars are small to medium, lamellar to expanding, uneven in size, and inconsistent in distribution. Both specimens 26:a and 26:c exhibit resharpening. Resharpening on specimen 26:a is heavy. Resharpening was bifacial-bilateral, and the specimen lacks beveling. Blank material is difficult to determine but appears to have passed through a preform stage as evidenced by the islands of primary flaking. Specimen 26:b exhibits a compound transverse fracture along inclusions in the chert. Specimen 26:c exhibits a transverse stress fracture across the notches.

Group 28:a-b Convex-based, Corner-notched Points - 1, 1 lateral fragment (Figure 34, h-i)

The specimens in this category exhibit straight bases, sharp stem- base junctures, expanding stems, corner notches, abrupt to slightly oblique shoulders, convex lateral margins, and bi-convex cross-sections. The chipping pattern consists of secondary and tertiary pressure flaking. Primary flaking, if present, has been completely obscured by later flaking. Secondary flake scars are medium to large, generally expanding, uneven in size, and inconsistent in distribution. Resharpening is very light. Tertiary flake scars are small, lamellar, fairly even in size, and inconsistent in distribution. Resharpening is bifacial-bilateral, and the specimen lacks beveling. Blank material is difficult to determine but appears to have passed through a preform stage based on the relative thickness of the specimen and the flaking pattern. Specimen 28:a exhibits an oblique compound fracture along an old fracture plane in the material. Specimen 28:b exhibits an oblique thermal fracture, and the entire surface has been heavily discolored. The latter exhibits a heavily utilized edge along the fracture edge after the thermal fracture of the specimen.

Group 33:a-c Small, Corner-notched Points - 3 proximal fragments (Figure 34, j)

The specimen exhibits a straight bases, sharp stem-base junctures, expanding stems, corner notches, oblique shoulders, and bi-convex cross-sections. The chipping pattern consists of secondary pressure flaking. Secondary flake scars are small, lamellar to expanding, uneven in size, and inconsistent in distribution. Blank material appears to have been chert flakes based on the relative thinness of the specimens.

Group 34:a-b Small, Concave-based, Corner-notched Points -2 (Figure 34, k-1)

The specimens in this category exhibit concave bases, sharp stem-base junctures, expanding stems, corner notches, slightly oblique to oblique shoulders, and bi-convex cross-sections. The chipping pattern consists of secondary pressure flaking. Secondary flake scars are small, lamellar to expanding, uneven in size, and inconsistent in distribution. Blank material appears to have been chert flakes based on the relative thickness of the specimens. One specimen is fire-blackened. Specimen 34:a exhibits a concave base, and specimen 34:b a slightly concave base. Specimen 4:a exhibits a thermal fracture, and specimen 34:b exhibits an oblique stress fracture.

Group 37:a Small, Corner-notched Point - 1 (Figure 34, m)

The specimen in this category exhibits a straight base, sharp stem-base juncture, expanding stem, abrupt shoulders, straight lateral margins, and a bi-convex cross-section. The chipping pattern consists of secondary pressure flaking only. Secondary flake scars are small, generally lamellar, fairly even in size, and inconsistent in distribution. This flaking is unifacial-bilateral and gives a beveled appearance to the blade. The specimen does not exhibit basal thinning or basal grinding. Notch flakes were created by the removal of multiple pressure flakes, and final notch flakes originate from alternate faces. Blank material consisted of a chert flake as evidenced by the islands of the original flake surfaces on both faces.

TABLE 8

Projectile Points

Artifact Measurements and Attributes - 23MC56

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Projectile Points						
Straight-based, Very Slightly Expanding-stemmed Points						
4 a	Sur.	37*	29	9	11g*	proximal fragment
4 b	5954	18*	24*	9*	4g*	proximal fragment
4 c	5356	11*	23	6*	1g*	proximal fragment
4 d	5516	13*	21*	6*	2g*	proximal fragment, burned
4 e	6237	12*	15*	6*	1g*	proximal fragment
4 f	6129	19*	30	6	5g*	proximal fragment
4 g	5060	17*	17*	7*	2g*	proximal fragment, burned
Long, Narrow Expanding-stemmed Point						
5 a	Sur	[illegible]	21	10	13g	
Square-stemmed Points						
[illegible]	[illegible]	56	33	6	15g	
[illegible]	[illegible]	51	[illegible]	10	14g	
[illegible]	[illegible]	[illegible]	[illegible]	9	8g	
[illegible]	[illegible]	16*	[illegible]	6*	3g*	proximal fragment
[illegible]	[illegible]	[illegible]	[illegible]	6*	4g*	proximal fragment, fracture utilized
[illegible]	[illegible]	[illegible]	[illegible]	7*	2g*	proximal fragment
[illegible]	[illegible]	[illegible]	24	9	5g*	proximal fragment
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1g*	proximal fragment
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	proximal fragment
[illegible]	[illegible]	[illegible]	[illegible]	5*	3g*	proximal fragment
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	proximal fragment
[illegible]	[illegible]	[illegible]	[illegible]	9	8g*	proximal fragment
[illegible]	[illegible]	[illegible]	[illegible]	7	2g*	proximal fragment
[illegible]	[illegible]	[illegible]	[illegible]	6*	1g*	proximal fragment
[illegible]						
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11g*	proximal fragment
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1g*	proximal fragment, partial reworking
[illegible]	[illegible]	[illegible]	[illegible]	7	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	6*	4g*	proximal fragment
[illegible]						
[illegible]	[illegible]	[illegible]	[illegible]	11	18g	
[illegible]	[illegible]	[illegible]	[illegible]	8*	3g*	proximal fragment
[illegible]	[illegible]	[illegible]	[illegible]	6	2g*	proximal fragment
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2g*	proximal fragment
[illegible]	[illegible]	[illegible]	[illegible]	7	7g*	proximal fragment
[illegible]	[illegible]	[illegible]	[illegible]	5*	3g	proximal fragment

TABLE 8 (cont'd)

Projectile Points

Artifact Measurements and Attributes - 23MC56

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Lobed-based Point						
14.a	3273	38	30*	9	14g*	burned
Concave-based, Straight-stemmed Point						
16.a	5177	52*	33	7	14g*	impact fracture
Slightly Concave-based, Lanceolate Point						
17.a	5337	17*	20*	[illegible]*	1g*	proximal fragment
Triangular Point						
18.a	3272	[illegible]0	22	8	7g	
Straight-based, Expanding-stemmed Points						
25.a	5060	47*	26	8*	9g*	impact fractured
25.b	5877	11*	26*	6*	1g*	proximal fragment
25.c	[illegible]	26*	24	9	5g*	proximal fragment
25.d	[illegible]	8*	19*	6*	1g*	proximal fragment
[illegible]-based, Slightly Expanding-stemmed Points						
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	11g	
[illegible]	[illegible]	27	[illegible]	11	8g*	proximal fragment
[illegible]	[illegible]	9*	21*	6*	1g	proximal fragment
[illegible], Corner-notched Points						
[illegible]	[illegible]	[illegible]	32[illegible]	8	9g*	
[illegible]	[illegible]	[illegible]	23*	7	7g*	lateral fragment, fracture [illegible], burned
[illegible] Straight-based, Corner-notched Point						
	[illegible]	[illegible]	19*	5	1g*	proximal fragment, burned
[illegible] Corner-notched Points						
[illegible]	[illegible]	[illegible]	[illegible]	5*	5g*	proximal fragment, burned
[illegible]	[illegible]	[illegible]	19*	5*	1g*	proximal fragment
[illegible] Corner-notched Point						
[illegible]	[illegible]	[illegible]	6	3	1g	
[illegible] Point Fragment						
[illegible]	[illegible]	[illegible]	16*	5*	1g*	proximal fragment

Group 45:a Unclassified Basal Point Fragment - 1

The specimen exhibits a convex base, rounded stem base juncture, narrow expanding stem, and a bi-convex cross-secton. It does not resemble any other category morphologically.

Group 47:a-u Distal Projectile Point Fragments - 21

The specimens vary considerably in size from impact fractures to almost entire blade segments. All specimens are relatively large and are worked by percussion and pressure flaking. Six specimens (47:a, 47:e, 47:g, 47:h, 47:j and 47:q) exhibit transverse stress fractures. Two specimens (47:b and 47:t) exhibit transverse stress fractures and longitudinal stress fractures. Four specimens ([illegible], 47:f, 47:m and 47:u) exhibit compound transverse fractures. Two specimens (47:k and 47:r) exhibit transverse thermal fractures. Specimen 47:l exhibits a transverse stress fracture and an impact fracture. Specimen 47:n exhibits double oblique fractures. Specimen 47:o exhibits a compound transverse fracture and a thermal fracture. Specimens 47:p and 47:s exhibit compound oblique fractures. Specimen 47:q has been heavily fire-blackened.

[illegible] Medial Projectile Point Segments - 12

Specimens range in size from thin segments to almost entire [illegible] segments. All lack both proximal and distal [illegible] specimens appear to be fragments of relatively [illegible]. Most have been moderately to heavily [illegible] along the lateral edges. Specimen 48:f exhibits [illegible]-blackening. Fracture patterns vary considerably.

[illegible] Projectile Point Shoulder Fragments - 7

[illegible] this category have only one remaining [illegible]. Specimens [illegible], 49:d, 49:e and 49:f have an [illegible] while specimens 49:b, 49:c and 49:g have [illegible] shoulder. Specimen 49:a exhibits a [illegible] fracture and a compound stress fracture. [illegible] and 49:g exhibit oblique stress [illegible] lateral margin to he notch. Specimen [illegible] longitudinal stress fracture and an oblique [illegible]. Specimen 49:e exhibits a transverse [illegible] fracture and oblique stress fracture. Specimen 49:f [illegible] transverse stress fractures. Specimen 49:a [illegible] exhibits an attempt to rework the [illegible] fracture.

Group 50:a-e Miscellaneous Projectile Point Fragments - 5

The specimens in this category are basal fragments fractured in such a way that determination of the original morphology is impossible. Specimens 50:c, 50:d and 50:e exhibit compound transverse fractures and longitudinal compound fractures. Specimen 50:a exhibits an oblique stress fracture. Specimen 50:d exhibits numerous thermal fractures. Specimens 50:b and 50:d are fire-blackened.

Scrapers

Group 51:a-c End Scrapers Made from Flakes - 3 (Figure 35, a-c)

All specimens are manufactured on flakes and have only one working element. All are fairly large in size and are closer to snub scrapers than any other classificatory scheme. All exhibit steep retouch of the lateral margins. Specimen 51:a is ovate while specimens 51:b and 51:c are roughly triangular in outline. Specimens 51:a and 51:b exhibit moderate to heavy wear on the distal ends consisting of edge rounding, step fracturing and flake scar abrasion and polish. Specimen 51:a is complete while specimens 51:b and 51:c exhibit slightly oblique stress fractures.

Group 52:a-d Hafted Scrapers - 4 (Figure 35, d-g)

These specimens were originally projectile points which were subsequently reworked into scrapers. Traces of a fracture removing most of the distal end is still visible on specimen 52:a. Specimens 52:a, 52:b and 52:c exhibit straight to slightly convex bases, very slightly expanding stems, and abrupt shoulders. Specimen 52:d exhibits a concave base, sharp stem-base juncture and incurvate lateral stem margins. Reworking on all specimens is bifacial and has resulted in convex working elements. None of the specimens exhibit a high degree of edge wear. Specimen 52:b exhibits some slight edge rounding.

Drill-like Implements

Group 54:a-j Narrow, Drill-like Implements - 1, 3 Proximal Fragments, 5 Distal Fragments, 1 Medial Fragment (Figure 35, h-q)

Specimens in this category have long, narrow working elements. The working elements are thick and often have been shaped by percussion as well as by secondary pressure flaking. Although these tools are often made from expended projectile points, only specimen 54:d may be a reworked projectile point. The remaining three specimens with proximal ends intact appear to have been manufactured from flakes. All seven fractured specimens exhibit transverse stress fractures. All of the specimens with distal ends intact exhibit little or no observable wear. Although specimens are apparently resharpened, the lack of any readily observable wear patterns makes any functional analysis of these tools difficult.

Group 55:a Biface Fragment Reworked into a Drill - 1 (Figure 35, r)

The specimen in this category consists of a large lateral biface fragment. The upper one-third of the specimen exhibits reworking into a drill. Flake scars along the longitudinal stress fracture extend up onto the face and down the fracture. This reworking has not completely removed evidence of the fracture. The original edge of the specimen has been slightly reworked up onto both faces. One edge of the original fracture exhibits moderate wear with edge rounding being dominant.

Graver-like Tools

Group 57:a Biface Fragment Reworked into a Graver - 1 (Figure 36, k)

The specimen in this category consists of a large biface fragment reworked to a narrow point. The specimen appears to have been a distal projectile point fragment. The specimen exhibits a transverse stress fracutre. The distal end has been heavily modified by secondary flaking along the margins leaving a small, narrow, graver-like point. These flake scars are small and variable in size and distribution. The point was heavily utilized and exhibits step-fracturing of both faces of the point.

Bifaces and Biface Fragments

Group 59:a Rectangular Biface - 1 (Figure 36, a)

The specimen in this category exhibits a straight base and square, parallel lateral margins. The chipping pattern consists largely of primary percussion flaking with marginal secondary pressure flaking. Primary flake scars are fairly large, generally expanding, uneven in size, and inconsistent in distribution. Secondary flaking along the edges is light, and was used only to slightly even the edges. The lateral margins still retain a slightly sinuous edge. Wear appears all along both lateral margins in the form of slight edge-rounding and heavier step-fracturing. Little or no polish is apparent. The specimen exhibits a percussion flake which has removed a portion of the distal end.

Group 60:a Ovate Biface -1 (Figure 36, b)

The specimen in this category is roughly ovate in outline. The chipping pattern consists of primary percussion flaking only. Flake scars are large, expanding, uneven in size, and inconsistent in distribution. The specimen lacks secondary flaking and still retains a sinuous edge. The most outstanding aspect of the tool is the heavy wear or ginding along the perimeter of the tool. Wear consists of very heavy edge-rounding or grinding. It would appear doubtful that the specimen attained the degree of edge-rounding through use, as the tool would have been non-functional for a considerable length of time prior to discard. The edges exhibit such heavy edge-rounding that the edges approach being faceted flat. This rounding extends slightly up the faces onto the flake scar margins. The purpose of the modification of the tool is undetermined. It exhibits a transverse stress fracture near the proximal end.

Group 67:a Proximal Fragment - Thin, Broad Biface with a Square Base - 1 (Figure 36, i)

This specimen exhibits a straight base, straight lateral margins, and a bi-convex cross-section. The chipping pattern consists of primary percussion flaking with slight secondary pressure flaking. Primary flake scars are large, generally expanding, uneven in size, and inconsistent in distribution. Secondary flake scars are small, generally lamellar, fairly even in size, and inconsistent in distribution. The specimen lacks any observable wear. It exhibits a transverse stress fracture and some heat spalling on the surfaces.

Group 68:a Proximal Fragment - Thin, Broad Biface with a Rounded Base - 1 (Figure 36, j)

This specimen exhibits a convex base, incurvate lateral margins, and a bi-convex cross-section. The chipping pattern consists of primary flaking only. Flake scars are large, lamellar to slightly expanding, fairly even in size, and inconsistent in distribution. There is little or no apparent wear. Blank material was a chert flake as evidenced by the presence of a hinge fracture along one edge.

TABLE 9

Scrapers, Drills, and Bifaces

Artifact Measurements and Attributes - 23MC56

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Scrapers						
End Scrapers Made from Flakes						
51:a	5512	44	35	8	15g	
51:b	3047	16*	31	8	4g*	lateral fragment
51:c	3063	29*	35	11	13g*	
Hafted Scrapers						
52:a	5138	33	26	7	8g	
52:b	5371	33	24	9	9g	
52:c	Sur.	22	24	8	4g	
52:d	3044	28	20	8	5g	
Drill-like Implements						
Narrow, Drill-like Implements						
54:a	6083	44	12	7	3g	
54:b	6096	30*	17	10	5g*	proximal fragment
54:c	5946	33*	20	9	6g*	proximal fragment
54:d	3001	32*	22*	8	6g*	proximal fragment
54:e	[illegible]	27*	10*	6*	2g*	distal fragment
54:f	Sur.	19*	8*	5*	1g*	distal fragment
54:g	3057	17*	13*	4*	1g*	distal fragment
54:h	5060	17*	10*	5*	1g*	distal fragment
54:i	5067	34*	10*	6*	2g*	distal fragment, burned
54:j	[illegible]	20*	10*	6*	2g*	medial fragment, burned
Bifaces						
Biface Fragment Reworked into a Graver						
57:a	5517	36	27	8	3g	
Rectangular Biface						
59:a	[illegible]	72*	30	10	23g*	
Ovate Biface						
61:a	[illegible]	[illegible]	39	9	21g	
Proximal Fragment - Thin, Broad Biface with a Square Base						
67:a	Sur.	26*	35*	12*	10g*	proximal fragment
Proximal Fragment - Thin, Narrow Biface with a Convex Base						
75:a	618?	31*	23*	6*	6g*	proximal fragment

Group 70:a Proximal Fragment - Thin, Narrow Biface with a Convex Base - 1 (Figure 36, k)

This specimen exhibits a convex base, straight, parallel lateral margins, and a bi-convex cross-section. The chipping pattern consists of secondary pressure flaking only. Secondary flake scars are small to medium, generally lamellar, uneven in size, and inconsistent in distribution. Wear is light and consists of slight edge-crushing and step-fracturing on both lateral margins. Tertiary resharpening flakes appear on both lateral margins. Flake scars are small, lamellar, fairly even in size, and inconsistent in distribution. The specimen exhibits a transverse thermal fracture.

Group 72:a-f Distal Fragments - Thin, Broad, Pointed Bifaces - 6 (Figure 36, c-h)

These specimens exhibit straight to slightly convex lateral margins, pointed distal ends and bi-convex cross-sections. The chipping pattern varies considerably. Specimens 72:a and 72:b exhibit careful secondary edge trimming and thinning. Specimen 72:a exhibits an island or primary percussion flaking on one face. Specimen 72:b lacks any trace of primary percussion flaking. Secondary flake scars are small to medium, generally lamellar, fairly even in size, and fairly consistent in distribution. These appear to be fragments of complete or nearly complete tools. Specimens 72:e and 72:f exhibit largely percussion flaking with secondary trimming and thinning of the edges, and specimens 72:c and 72:d exhibit primary percussion flaking only. Primary flake scars on these specimens are fairly large, generally expanding, uneven in size, and inconsistent in distribution. Specimens 72:a and 72:b exhibit oblique stress fractures, and specimens 72:c, 72:d, 72:e and 72:f exhibit transverse stress fractures. An attempt was made to rework specimen 72:d after fracture as flaking is apparent over the fracture edge.

Group 75:a-ck Miscellaneous Thin Biface Fragments - 89

This category consists of miscellaneous thin biface fragments too small to be able to determine what kind of tool they represent. These may be subdivided on the basis of chipping pattern.

The first sub-category consists of thin biface fragments with primary and/or secondary flake scars, careful edge trimming, and with most exhibiting resharpening. These vary considerably in size and fracture patterns. There are 63 specimens in this sub-category.

The second sub-category consists of thin biface fragments which exhibit primary percussion flaking, lack edge trimming on the margins, and exhibit little or no secondary flaking. Again, there is considerable variation in size and fracture patterns. There are 25 specimens in this sub-category.

Group 76:a-6 Miscellaneous Thick Biface Fragments - 25

This category consists of miscellaneous thick biface fragments too small to be able to determine what type of tools they represent. The category may be subdivided on the basis of chipping pattern.

The first sub-category consists of thick biface fragments which exhibit primary percussion flaking only. Secondary flaking is absent. All lack any visible wear. There is a considerable amount of variation in size and fracture pattern. There are fourteen specimens in this sub-category.

The second sub-category consists of thick biface fragments which exhibit primary percussion flaking, light secondary flaking, lack of trimming on the margins, and a lack of observable wear. There is considerable variation in size and fracture pattern. There are five specimens in the sub-category.

The third sub-category consists of thick biface fragments with primary and/or secondary flaking and careful edge-trimming. Most exhibit wear and resharpening. Again, the specimens exhibit considerable variation in size and fracture patterns. There are six specimens in this sub-category.

Cores

Group 77:a-q Polyhedral Cores - 17

This category includes chert nodules from which flakes have been driven in a highly irregular fashion. Twelve specimens still retain cortex on at least one margin. Almost all are glacial chert and are heavily riddled with fracture planes.

Group 80:a-n Nuclei - 14

The specimens in this category include chert cores which have been exhausted. All appear to have originally been polyhedral cores. Seven of the specimens still retain some cortex. Most appear to be glacial chert. Specimens do not contain as many fracture planes as larger cores.

Group 78:a-r Core Fragments - 18

The specimens included in this category exhibit all of the external criteria of cores except that one or more faces representing fracture planes or stress fractures are present. It appears that most are fragments of polyhedral cores. Most still retain cortex and exhibit numerous fracture planes.

Miscellaneous/Worked Chert

Group 83:a-g Miscellaneous/Worked Chert - 7

These specimens have little in common, other than the presence of some working on at least one face and one edge. Some are roughly worked flakes or shatter, while others are nearer to cores or core fragments. Flaking pattern lacks a discernable pattern. The primary purpose does not appear to have been to remove flakes for usage. Flaking is largely by percussion and is bifacial on all specimens.

Flake Tools

Group 84:a-t Retouched Flakes - 20

The specimens in this category exhibit intentional modification of the flake margins by additional flake removal. Most of the specimens are fragmentary. Two specimens are complete, one is relatively complete, and seventeen are fragmentary. Thirteen are lateral fragments, two are distal fragments, one is a proximal fragment, and one is a medial fragment. Fourteen specimens exhibit acute edge angles, and the remaining six have steep edge angles. Fourteen specimens exhibit unifacial retouch and the remaining six exhibit bifacial retouch. Statements regarding the number of retouched ends and edges are not really meaningful due to the fragmentary nature of the specimens. Fourteen specimens exhibit retouch on one lateral edge; two specimens exhibit retouch on two lateral edges; one specimen exhibits retouch on the distal end; two specimens exhibit retouch on two lateral edges and the distal end; and one specimen exhibits retouch on two lateral edges and both ends.

Group 86:a-an Utilized Flakes - 40

Specimens in this category exhibit utilization in the form of minute flake removal along the flake margin through utilization. Sixteen specimens are complete, two specimens

TABLE 10

Flake Tools

Artifact Measurements and Attributes - 23MC56

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
<u>Miscellaneous Worked Chert</u>						
63.a	5951	32*	27*	11*	7g*	
63.b	5692	39	27	12	14g	
63.c	5433	43*	36*	11*	18g*	
63.d	5199	32*	27*	12*	11g*	
63.e	5132	35*	32*	15*	13g*	
63.f	5413	31*	28*	10	10g*	
63.g	5040	35*	32*	7*	13g*	
<u>Flake Tools</u>						
<u>Retouched Flakes</u>						
64.a	5658	26*	12*	9*	3g*	1 edge
64.b	5067	22*	17	6	2g*	2 edges, 1 end
[illegible]	[illegible]	24	21	3	2g	1 edge
[illegible]	[illegible]	21*	10*	5*	1g*	1 edge
[illegible]	[illegible]	[illegible]	16*	7*	3g*	1 end
[illegible]	[illegible]	[illegible]	15	6	2g*	1 edge
[illegible]	[illegible]	26*	20*	4	3g*	1 edge
[illegible]	[illegible]	[illegible]	24	3	3g*	2 edges, 1 end
[illegible]	5062	29*	23*	5*	3g*	1 edge, 1 edge util.
64.j	5262	25*	20*	5*	2g*	1 edge
[illegible]	[illegible]	26*	14*	4*	2g*	1 edge
[illegible]	[illegible]	[illegible]	18*	3*	1g*	1 edge
[illegible]	[illegible]	43*	36	4	14g*	2 edges
[illegible]	[illegible]	61	26	9	14g	2 edges
[illegible]	[illegible]	26	[illegible]	10*	3g*	1 edge
[illegible]	[illegible]	[illegible]	9*	3*	1g*	1 edge
[illegible]	[illegible]	64	25	6	12g	2 edges, 2 ends
[illegible]	[illegible]	[illegible]	20*	6*	4g*	1 edge
[illegible]	[illegible]	[illegible]	15*	5*	4g*	1 edge
[illegible]	[illegible]	[illegible]	[illegible]	3*	1g*	1 edge
[illegible]						
[illegible]	[illegible]	[illegible]	[illegible]	9	11g	1 edge
[illegible]	[illegible]	[illegible]	[illegible]	11	12g	2 edges
[illegible]	[illegible]	[illegible]	[illegible]	10	6g	1 edge
[illegible]	[illegible]	[illegible]	[illegible]	8*	10g*	2 edges
[illegible]	[illegible]	[illegible]	[illegible]	7*	4g*	1 edge

TABLE 10 (cont'd)

Flake Tools

Artifact Measurements and Attributes - 23MC56

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Utilized Flakes (cont'd)						
86:f	3049	24	17	5	1g	2 edges, 1 end
86:g	3049	25*	26*	3	3g*	1 edge
86:h	5806	47	26	5	6g	1 edge, 1 end
86:i	5808	30*	27	2	4g*	2 edges
86:j	6181	68	56	13	48g	1 edges
86:k	5115	18	13	2	1g	1 edge
86:l	5102	24	12	3	1g	1 edge
86:m	5096	24*	15*	5	2g*	1 edge, 1 end
86:n	5085	36*	31*	2	2g*	1 end
86:o	5088	15*	6*	1	1g*	1 edge
86:p	5088	32	21	4	3g	2 edges, 1 end
86:q	5067	21*	14*	2	1g*	1 edge
86:r	5064	30*	16*	7*	3g*	1 edge
86:s	5064	30	22	7	4g	1 end
86:t	5062	25	30	2	3g	2 edges, 2 ends
86:u	5061	14*	13*	4	1g*	1 edge
86:v	5060	25*	25*	5	4g*	1 edge
86:w	5060	21*	18*	6	2g*	1 edge
86:x	5058	66	37	8	13g	2 edges
86:y	5057	26*	19*	4	3g*	1 edge
86:z	5057	25*	19*	5*	4g*	1 edge
86:aa	5059	24*	21*	2*	2g*	1 edge
86:ab	3001	29*	21*	5*	2g*	1 edge, concave
86:ac	3050	8*	7*	4*	1g*	1 edge
86:ad	[illegible]	40*	28	6	6g*	2 edges, 1 end
86:ae	[illegible]	50	33	10	9g	2 edges, 1 end
86:af	3044	35*	27	7	5g*	1 edge
86:ag	Sur.	28	19	4	3g	2 edges
86:ah	Sur	32	17*	4	2g*	1 end
86:ai	Sur	29*	27	3*	3g*	2 edges
86:aj	Sur	15*	16*	3*	1g*	1 edge
86:ak	Sur	27*	15*	9*	3g*	1 edge
86:al	Sur	35	32	6	5g	1 edge
86:am	Sur.	62	17	12	11g	1 edge
86:an	Sur	33	41	13	26g	2 edges

TABLE 11

Cores

Artifact Measurements and Attributes - 23MC56

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Polyhedral Cores						
77:a	5660	75	73	64	366g	
77:b	6184	55	41	32	75g	
77:c	5267	56	42	24	47g	
77:d	6205	54	51	31	79g	
77:e	3001	49	36	33	59g	
77:f	Sur.	102	86	39	437g	
77:g	Sur	68	57	41	190g	
77:h	Sur.	78	47	19	73g	
77:i	Sur	56	47	32	93g	
77:j	[illegible]	63	39	23	53g	
77:k	Sur	78	37	35	88g	
77:l	[illegible]	145	70*	59	866g*	
77:m	Sur	63	52	39	99g	
[illegible]						
[illegible]	[illegible]	[illegible]	19	19	8g	
[illegible]	[illegible]	[illegible]	35	19	20g	
[illegible]	[illegible]	[illegible]	34	23	38g	
[illegible]	Sur	[illegible]	41	25	58g	
[illegible]	[illegible]	[illegible]	34	28	49g	
[illegible]	[illegible]	59	46	21	53g	
[illegible]	[illegible]	54	26	17	23g	
[illegible]	[illegible]	[illegible]	39	14	29g	
[illegible]	Sur	[illegible]	[illegible]	27	33g	
[illegible]	[illegible]	42	30	25	26g	
[illegible]	Sur.	[illegible]	30	[illegible]	14g	
[illegible]	Sur	[illegible]	31	26	27g	
[illegible]	Sur	31	25	23	22g	
[illegible]	[illegible]	[illegible]	29	26	14g	
[illegible]	Sur	[illegible]	24	14	14g	

are nearly complete, and twenty-two specimens are fragmentary. Of the fragmentary specimens, twelve are lateral fragments, two are distal fragments, seven are proximal fragments, and one specimen is a medial fragment. Thirty-seven specimens have acute working elements, and three have steep edge angles. Thirty specimens exhibit unifacial wear, and ten specimens exhibit bifacial wear. Twenty-three specimens have one utilized edge; six specimens exhibit two utilized edges; three specimens exhibit the distal end utilized; and two specimens are utilized around the entire circumference. Twenty-one specimens are only lightly utilized; seven specimens exhibit heavier utilization; and twelve specimens have been heavily utilized.

Ground and Pecked Stone

Group 90:a-aj Pecked Stone - 37 (Figure 37, a-f)
(Figure 38, a-f)

These specimens exhibit pecking on one or both faces of the stone. All exhibit central facial pecking which is sometimes of sufficient intensity to identify the area as an actual pit. Twenty specimens exhibit pecking on a single face; twelve specimens exhibit pecking on both faces; one specimen exhibits two pits on one face and one pit on the other face; and five specimens are fractured in such a way that determination of the number of faces pecked is impossible. The pecked area is generally fairly centered on the faces and is generally small and circular. In almost all cases, the cortex has been pecked away, and the interior color of the stone constrasts sharply with the surrounding cortex color.

Group 91:a-aa Ground Stone - 29 (Figure 39, a-f)

The specimens in this category exhibit at least one face which has been ground. If sufficient cortex had been removed to reveal the interior color, specimens were considered to be culturally ground stone. Most exhibit relatively fine striations which are generally multi-directional. Specimens sometimes exhibit light polish along higher areas on the surfaces. Only six specimens are complete, and only four specimens are broken but are sufficiently complete to determine that there is no other modification such as pecking or battering. It is quite probable that a large number of these represent fragments of multi-purpose tools.

TABLE 12

Pecked Stone

Artifact Measurements and Attributes - 23MC56

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Ground and Pecked Stone						
Pecked Stone						
90 a	Sur.	94	37	30	436g	1p; argillite
90 b	5060	84	70	45	523g	1p; quartzite
90 c	[illegible]	89	81	53*	420g*	1p; granitic quartzite
90 d	[illegible]	74	66	34	291g	2p; argillite
90 e	[illegible]	162	126	88	2895g	1p; gabbro
[illegible]	Sur	[illegible]	102	76	1597g	2p, 1p; granitic quartzite
[illegible]	[illegible]	[illegible]	64*	64	415g*	1p; argillite
[illegible]	[illegible]	86	64	32	336g	2p; argillite
[illegible]	[illegible]	80	[illegible]	40	318g	2p; argillite
[illegible]	[illegible]	93	70	45	367g	1p; argillite
[illegible]	[illegible]	[illegible]	49*	48	382g*	1p; diorite
[illegible]	[illegible]	[illegible]	63	54	418g	1p; quartzite
[illegible]	[illegible]	[illegible]	62	50	292g	1p; flint hill sandstone
[illegible]	[illegible]	[illegible]	[illegible]	41	264g	2p, argillite
[illegible]	[illegible]	[illegible]	[illegible]	36	261g	1p, argillite
[illegible]	[illegible]	[illegible]	[illegible]	40	518g	1p; argillite
[illegible]	[illegible]	[illegible]	[illegible]	23	148g	1p; diorite
[illegible]	[illegible]	[illegible]	[illegible]	37	661g	2p; diorite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	24g*	1p; flint hill sandstone
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	656g	2p, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	750g	2p, diorite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2p; argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1071g*	1p; argillite
[illegible]	[illegible]	[illegible]	[illegible]	45	647g	1p, diorite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	147g*	1p, diorite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1p; argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	525g	2p, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	495g	2p, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	559g	2p, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1p; argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	643g	1p, felsite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	495g	2p, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	562g	1p, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1p, quartzite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1p, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1p, diorite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	180g	1p, argillite

Group 92:a-k Battered Stone - 11 (Figure 45, a-f; Figure 46, a-b)

The specimens in this category exhibit battering on one or both ends and one or both edges. Battering varies from light to moderate edge-crushing. None exhibit edge-shattering. A crumbling effect noted on the specimens with direct percussion on hard materials is present on three specimens. It would appear that all of these were utilized in direct contact with hard material such as stone. The other specimens exhibit evidence of less heavy percussion. Size and shape are the most variable characteristics. Specimens range from small to large and thick. The type of wear is not readily distinguishable between specimens, and it is difficult to make any determination of function. Edge wear grades from light to heavy. The only generalization is larger specimens were used for heavier tasks. Multiple functions are probably represented by these specimens. Two specimens exhibit battering on only one end; two specimens exhibit battering on the two opposing ends; one specimen exhibits battering on the three alternate edges; two specimens exhibit a large battered area on one end up to the edges; one specimen exhibits battering on the lower end of two edges and on both faces near the same end; and four specimens are fractured in such a way that determination of the number of ends or edges battered is impossible. These four specimens are fragmentary and have been fire-cracked.

Group 93:a-y Ground and Pecked Stone - 26 (Figure 41, a-f; Figure 42, a-f)

These specimens exhibit one or more faces which have been ground and one or more faces which have been pecked or pitted. Six specimens exhibit one face which has been pecked and ground; six specimens exhibit two pecked faces and one ground face; two specimens exhibit two pecked faces and two ground faces; and eleven specimens are fractured in such a way that determination of the number of faces pecked and ground is not possible. Twelve specimens have been fire-cracked.

Group 94:a-l Pecked and Battered Stone - 12 (Figure 40, a-f)

The specimens in this category exhibit one or more faces which have been pecked or pitted and one or more edge and end exhibiting battering. There does not appear to be any recognizable pattern in the number of faces pecked and the number of edges or ends battered. Almost all conceivable combinations of battering and pecking are present. Areas of battering are usually discrete and not

TABLE 13

Ground Stone

Artifact Measurements and Attributes - 23MC56

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Ground Stone						
[illegible]	5523	73*	58*	37*	77g*	lg?; argillite
[illegible]	3037	62*	50*	34*	169g*	lg?; argillite
[illegible]	3025	83*	73*	23*	278g*	lg?; granite
[illegible]	3064	60*	54*	17*	107g*	lg; argillite
[illegible]	6201	64*	32*	29*	85g*	lg?; argillite
[illegible]	5554	66*	38*	18*	35g*	lg?; argillite
[illegible]	5424	74	73	38*	404g*	lg; argillite
[illegible]	5537	74*	59*	35*	257g*	lg?; argillite
[illegible]	5949	58*	50*	36*	109g*	lg?; argillite
[illegible]	3269	[illegible]	78	35	489g	2g; argillite
[illegible]	[illegible]	[illegible]	26*	16*	26g*	lg?; argillite
[illegible]	[illegible]	58	33*	35*	115g*	lg?; argillite
[illegible]	[illegible]	[illegible]	50*	50*	262g*	2g; diorite
[illegible]	Sur.	[illegible]	79	42	689g	lg; argillite
[illegible]	Sur	[illegible]	67	56	536g	lg· argillite
[illegible]	Sur	79	74	47	595g	lg; diorite
[illegible]	Sur	[illegible]	63	33	292g	lg; argillite
[illegible]	Sur	[illegible]	42*	40*	123g*	lg?; argillite
[illegible]	Sur.	[illegible]	45*	17*	73g*	lg?; argillite
[illegible]	Sur		*	*	17g*	lg?; argillite
[illegible]	Sur.	[illegible]	*	*	20g*	lg?; argillite
[illegible]	Sur	[illegible]	*	*	28g*	lg?, argillite
[illegible]	Sur.	[illegible]	*	*	35g*	lg?; argillite
[illegible]	Sur	55*	48*	17*	102g*	lg?; argillite
[illegible]	Sur		*	*	94g*	lg?; argillite
[illegible]	Sur	[illegible]	*	*	42g*	lg?; argillite
[illegible]	Sur	[illegible]	[illegible]	57*	185g*	lg?; argillite
[illegible]	Sur	114	67*	52*	599g*	lg; gabbro
[illegible]	Sur	93	77	55	521g	lg; quartzite

continuous. Only five specimens are fragmentary and have been fire-cracked.

Group 95:a Ground and Battered Stone - 1
(Figure 44, f)

This specimen exhibits one ground face and two battered ends. The degree of force was not heavy as the edges of the peck marks are somewhat diffuse, as opposed to the more clearcut crumbling effect noted in direct pecking of dense materials. The battered area is on the highest points of the ends and does not extend up onto the faces or onto the edges. No observable battering is present on the two edges.

Group 96:a-m Ground, Pecked and Battered Stone - 15
(Figure 43, a-f; Figure 44, a-e)

The specimens in this category exhibit one or more ground faces, one or more pecked faces, and one or more battered ends or edges. These specimens are generally more heavily utilized than other categories of ground and pecked stone. There does not appear to be any recognizable pattern in the number of faces ground or pecked and the number of faces ground or pecked and the number of edges or ends battered. Almost all conceivable combinations are present, although one ground face, two pecked faces, and multiple battered ends and edges appear more commonly. Areas of battering are generally discrete and not continuous. Only two specimens are fragmentary and have been fire-cracked.

Group 97:a-d Chert Hammerstones - 4 (Figure 46, c-f)

The specimens in this category are variable in wear. Flakes have been removed from the lateral margins or faces and were initially cores. All specimens still retain cortex on at least one face or edge. Specimen 97:a exhibits edge wear completely around the lateral margins. Specimens 97:b through 97:d exhibits the bulk of the wear on the two opposing ends and the lighter wear along the edges. All are roughly circular. Specimens 97:b through 97:d exhibits edge wear which is characterized by edge-crushing only. The degree of force appears to have been heavier on specimen 97:a as the edges are rough and the crushing of edges is fairly severe. Specimen 97:a also exhibits some slight edge-rounding. Much of this edge-rounding has largely obscured the earlier edge-crushing.

Group 102:a-e Ground Sandstone, Grooved - 5
(Figure 50, a-d)

Specimen 102:a exhibits three deep, narrow grooves on one face, one broad, deep groove on the opposite face, and

TABLE 14

Ground, Pecked, and Battered Stone

Artifact Measurements and Attributes - 23MC56

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Battered Stone						
92:a	5528	75	64	35	276g	2b; argillite
92 b	5347	68*	55*	45*	216g*	1b; argillite
92 c	5715	84*	73*	56*	447g*	1b; argillite
92 d	5369	84	70	40	471g	1b; quartz
92 e	6170	100	64	55	671g	2b; quartzite
92 f	[illegible]	64	53	31	205g	4b; quartzite
92 g	Sur.	[illegible]	107	60	1178g	3b; chert
92 h	5541	[illegible]	[illegible]*	[illegible]*	18g*	1b?; argillite
92 i	Sur	[illegible]	55	59	759g	1b; argillite
92 j	Sur	[illegible]*	53*	37*	303g*	1b; argillite
92 k	Sur.	[illegible]	[illegible]	[illegible]*	99g*	1b?; argillite
Ground and Pecked Stone						
[illegible]	Sur	[illegible]	71	43	430g	1p, 1g; argillite
[illegible]	[illegible]	[illegible]	[illegible]	51	756g	2p, 1g; argillite
[illegible]	[illegible]	[illegible]*	[illegible]*	49*	235g*	1p?, 1g; argillite
[illegible]	[illegible]	[illegible]	39*	45*	194g*	2p, 2g, argillite
[illegible]	[illegible]	[illegible]	79	44	492g	2p, 1g; argillite
[illegible]	[illegible]	114	92	62*	1025g*	1p?, 1g; dolerite
[illegible]	[illegible]	96	71	45	413g	1p, 1g; argillite
[illegible]	[illegible]	113	78	55	820g	1p, 1g; quartzite
[illegible]	[illegible]	96	[illegible]*	41*	303g*	1p, 1g; granite
[illegible]	[illegible]	[illegible]*	55*	51*	281g*	2p, 1g; diorite
[illegible]	[illegible]	[illegible]*	29*	38*	116g*	1p?, 1g; argillite
[illegible]	[illegible]	65	62	40	208g	2p, 1g; argillite
[illegible]	[illegible]	[illegible]	32*	33*	42g*	1p?, 1g?; argillit
[illegible]	[illegible]	[illegible]	[illegible]*	[illegible]*	6g*	1p?, 1g?; argillit
[illegible]	[illegible]	[illegible]*	[illegible]*	[illegible]*	533g*	1p?, 1g?; diorite
[illegible]	[illegible]	[illegible]	75	[illegible]*	589g*	2p, 1g?, argillite
[illegible]	[illegible]	[illegible]	78	39	475g	1p, 1g, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	448g	2p, 2g; argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	875g	1p, 1g, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	389g	2p, 1g, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1p, 1g, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]*	1p?, 1g?, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	58g	1p?, 1g?, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	68g*	1p?, 1g?, felsite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1p, 1g, argillite

TABLE 15

Ground, Pecked, and Battered Stone

Artifact Measurements and Attributes - 23MC56

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Pecked and Battered Stone						
94:a	5234	109	96	58	995g	1p, 3b; argillite
94:b	5376	76	44	77	220g	1p, 1b; argillite
94:c	6005	76	58	38*	266g*	1p?, 2b; argillite
94:d	5730	72	69	27	249g	2p, 2b; quartzite
94:e	3166	82*	80	40	518g*	1p, 1b; argillite
94:f	3243	103*	93	41	895g*	1p, 4b (c); argillite
94:g	5907	113	73*	57*	835g*	1p, 4b (c); argillite
94:h	3060	84*	70*	40*	334g*	1p?, 1b; diorite
94:i	3035	106	66	39	551g	2p, 2b; diorite
94:j	Sur.	72	59	33	208g	2p, 4b; quartzite
94:k	Sur.	84	66	43	371g	2p, 3b; argillite
94:l	Sur.	*	*	*	53g*	1p?, 1b?; argillite
Ground and Battered Stone						
95.a	5248	88	63	45	449g	1g, 2b; argillite
Ground, Pecked, and Battered Stone						
96:a	6019	81	75	38	393g	2p, 1g, 3b; argillite
96:b	5185	109	93	42	756g	1p, 1g, 4b; argillite
96:c	5235	118	76	48	747g	1p, 1g, 2b; argillite
96:d	5269	124	71	50	805g	2p, 1g, 2b; argillite
96:e	[illegible]	104	88	41	778g	2p, 2g, 1b; argillite
96:f	[illegible]	79	72	33	374g	2p, 2g, 4b (c); argillite
96:g	3027	82	68	38	385g	1p, 1g, 2b: argillite
96:h	3036	*	*	*	58g*	1p?, 1g?, 1b?; argillite
96:i	6185	*	*	*	123g*	1p?, 1g?, 1b?; argillite
96:j	5098	105	84	44	741g	2p, 1g, 3b. argillite
96:k	[illegible]	71	62	35	380g	2p, 1g, 1b; argillite
96:l	Sur.	94	36	49	659g	2p, 2g, 2b; argillite
96:m	Sur.	[illegible]	75	35	384g	2p, 1g, 3b; argillite
96:n	Sur.	76	74	43	411g	2p, 1g, 3b; argillite
96:o	Sur.	91	83	45	482g	2p, 1g, 2b; argillite
[illegible]	Sur.	[illegible]	68	39	524g	2p, 1g, [illegible]; argillite

one deep, narrow groove on one end. Specimen 102:b exhibits two narrow, deep grooves crossing each other on one face and two narrow, deep grooves parallel to each other on the opposite face. Specimen 102:d exhibits two narrow, shallow grooves on one face. Specimen 102:d exhibits two narrow, deep grooves on one face. All of the specimens appear to have been used to sharpen narrow objects. The narrow, deep grooves have resulted from the sharpening of small, narrow objects, such as awls. The grooves on the faces are not of recent origin as these exhibit slight secondary cortex as well as manganese deposits in grooves. The grooves are broadly V-shaped, with sharp to rounded bottoms in the V's.

Group 103:a Ground Sandstone, Small, Flat with Grooves - 1 (Figure 50, e)

The specimen in this category is a small piece of glacial sandstone. It exhibits smooth concavities on three faces and one face with a narrow deep groove. The grooves appear to be the result of sharpening narrow objects such as awls. The smooth faces are the result of smoothing larger objects. The grooves are broadly V-shaped.

Group 104:a-c Chipped Argillite - 3 (Figure 50, f-h)

The specimens in this category exhibit flake removal from the margins. Specimen 104:a exhibits flakes removed from around the edges and appears to be a core. Specimens 104:b and 104:c have a number of flakes removed from a single edge. One flake on the opposite face removed the fragments from a larger piece of materal. These specimens do not exhibit any wear on the flaked edge and the purpose of the alteration is uncertain.

Group 107:a-f Metates - 4, 2 fragments (Figure 47, a-b; Figure 48, a-b)

Specimens in this category are large and exhibit slightly concave working surfaces. Grinding is present on one face on specimens 107:a, 107:b, 107:c and 107:f. Grinding is present on both faces on specimens 107:d and 107:e. Specimens exhibit cortex removal, have little or no polish, and are smooth and lack observable striations.

Group 108:a Metate in Process in Manufacturing - 1 (Figure 49, b)

This specimen is large and exhibits modification of one face. The alternate face exhibits complete cortex while the opposite face exhibits no remaining cortex. The latter face exhibits heavy pecking across the entire face and shattering

TABLE 16

Modified Stone

Artifact Measurements and Attributes - 23MC56

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
<u>Chert Hammerstones</u>						
97:a	5266	72	68	67	582g	Chert
97:b	6082	63	56	46	171g	Chert
97:c	Sur.	78	74	57	367g	Chert
97:d	Sur.	79	67	58	315g	Chert
<u>Ground Sandstone - Grooved</u>						
102:a	5170	48	42	15	30g	5NDG, 1BDG; glacial sandstone
102:b	5911	30	22	21	20g	4NDG; glacial sandstone
102:c	5910	26	23	21	16g	2NSG; glacial sandstone
102:d	Sur.	55	41	28	69g	2NDG; glacial sandstone
<u>Ground Sandstone - Small, Flat with Grooves</u>						
103:a	5614	29*	30*	22*	69g*	3SC; 1NDG, glacial sandstone
<u>Chipped Argillite</u>						
104:a	3030	56	57	55	209g	argillite
[illegible]	5476	39	37	26	29g	argillite
[illegible]	[illegible]	123	[illegible]	41	216g	argillite
[illegible]						
[illegible]	[illegible]	150*	144*	45*	1340g*	1g, argillite
[illegible]	[illegible]	[illegible]	151	61*	2600*	1g, argillite
[illegible]	[illegible]	[illegible]	[illegible]	60*	791g*	1g, diorite
[illegible]	[illegible]	[illegible]	[illegible]	85	3800g	2g; argillite
[illegible]	[illegible]	[illegible]	[illegible]	76	5900g	[illegible], quartzite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5800g	[illegible], quartzite
[illegible] Manufacture						
[illegible]	[illegible]	[illegible]	[illegible]	96	12,000[illegible]	1 prep. [illegible] quartzite
[illegible]						
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	H, BF, argillite
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	L, BF, argillite
[illegible]	[illegible]	[illegible]	[illegible]	51	[illegible]	H, BF, argillite
[illegible]	[illegible]	105	81	51	[illegible]	H, BF, felsite
[illegible]	[illegible]	76	59	26	119g	L, BF, quartzite
[illegible]	[illegible]	[illegible]	71	[illegible]	265g	L, BF, argillite
[illegible]	[illegible]	[illegible]	[illegible]	12	65g	L, UF, quartzite
[illegible]	Sur.	99	66	49	[illegible]	H, BF, diorite

NDG=Narrow Deep Grooves
BDG=Broad Deep Grooves
NSG=Narrow Shallow Grooves
SC=Shallow Concave

H=Heavy Wear
L=Light Wear
BF=Bifacial
UF=Unifacial

down the edges. Based on the general shape, the specimen was being prepared for use as a metate. The process was not complete, however, and it does not exhibit any grinding on the face. The entire face is still slightly dome-shaped and it does not appear that the shaping process was completed.

Group 110:a-n Utilized Fire-cracked Rock - 8
(Figure 51, a-h)

The specimens in this category appear to be divided into two broad categories based on the type of utilization present. Specimens 110:a, 110:c, 110:d, 110:f, 110:g and 110:h exhibit wear along abrupt edges which resulted from heavy use. These edges exhibit flakes driven up the faces from the edges. This flake removal is bifacial and is relatively heavy. These specimens appear to have been used in a chopping motion.

The second sub-category consists of thin fragments of fire-cracked rock which exhibits light modification along the edges. This modification consists of light edge-crushing. Specimens are thin and flake removal on the faces is light and bifacial. These specimens appear to have been used in a cutting motion.

Hematite

Group 115:a Hematite Axe - 1 poll fragment (Figure 52, a)

The specimen in this category is relatively thin. It was lightly chipped into shape, and a few flake scars are still visible on the lateral margins. The notches on both lateral margins and the grooves across the faces were then pecked into the specimen. The specimen was then lightly ground on the margins and on the face. Striations across the faces are highly multi-directional but tend to be roughly perpendicular to the longitudinal axis. Wear in the notches is only slightly greater than outside. It does not appear that the specimen was used for a long time prior to failure. The specimens exhibits a transverse compound fracture across the blade. Attempts to rework the broken margin are apparent. Numerous flakes were removed from approximately one-third of the fracture.

Group 117:a-p Chipped Hematite - 16 (Figure 52, c-e)

Two specimens exhibit flakes removed from two edges bifacially and appear to have been in the process of shaping towards a tool form. The remainder of the specimens have numerous flakes removed, but there is no discernible pattern

TABLE 17

Hematite

Artifact Measurements and Attributes - 23MC56

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
<u>Hematite</u>						
<u>Hematite Axe</u>						
115:a	6106	92*	81	18	310g*	
<u>Chipped Hematite</u>						
117:a	4006	60	34	17	66g	1C UF, UL
117:b	5258	46	28	20	50g	2C UF, UL
117:c	5541	23	13	11	4g	2C UF, UL
117:d	5803	51	29	18	48g	1C BF, UL
117:e	6032	35	29	10	12g	2C UF, BL
117:f	6135	16	15	10	7g	3C UF, TL
117:g	6263	41	26	13	22g	2C UF, BL
117:h	Sur.	67	66	21	202g	2C BF, BL
117:i	6033	47	47	9	31g	2C BF, BL
117:j	3044	29	21	16	17g	3C UF, BL
117:k	3049	24	19	10	10g	2C BF, BL
117:l	3055	14	12	9	4g	MC UF, ML
117:m	3128	72	52	18	90g	2C BF, BL
117:n	3186	27	23	14	16g	1C BF, UL
117:o	3208	29	22	10	12g	1C BF, UL
117:p	3224	22	17	13	8g	1C UF, UL
117:q	3229	22	14	11	4g	1C UF, UL
<u>Ground Hematite</u>						
118:a	6173	22*	22*	16*	12g*	1G
118:b	3003	10	7	3	1g	2G
<u>Ground Hematite Flake</u>						
121:a	3001	17	12	4	1g	1G, Fl
<u>Utilized Fire-cracked Hematite</u>						
122:a	3229	84	42	13	188g	1 util. edge
<u>Scratched and Chipped Hematite</u>						
134:a	Sur.	65*	51	23	131g*	1G, 2C BF, BL

C = Chipped
M = Multiple
UF = Unifacial
BF = Bifacial

UL = Unilateral
BL = Bilateral
TL = Trilateral
ML = Multilateral

to removal. These specimens are irregular and do not appear to be part of a tool shaping process.

Group 118:a-c Ground Hematite - 3 (Figure 52, b)

The specimens in this category have one ground surface. The ground surfaces have been only lightly ground, and striations are largely unidirectional generally perpendicular to the longitudinal axis. They have been ground on a fine-grained abrasive.

Group 119:a-cd Hematite Flakes - 82

The specimens in this category are flakes removed from larger pieces of hematite. Approximately thirty percent of the specimens exhibit cortex on one surface, while the remaining specimens are interior flakes.

Group 121:a Ground Hematite Flake - 1 (Figure 52, f)

This category consists of a single hematite flake with one ground surface. The ground surface exhibits fine, multidirectional striations. Striations have been produced by a fine-grained abrasive. It appears that the flake was removed from a completed tool. The flake is relatively thick and may have been part of reworking of a broken specimen.

Group 122:a Utilized, Fire-cracked Hematite - 1 (Figure 52, g)

There was a single piece of fire-cracked hematite which was subsequently utilized. It exhibits one heavily potlidded surface and the other face exhibits cortex in the center and potlids around the exterior. One edge exhibits two large flakes and multiple fine flakes removed from one edge. The utilized edge is relatively acute.

Group 12:a-b Scratched and Ground Hematite - 2 (Figure 52, h-i)

One specimen is chipped bifacially-bilaterally and appears to have been in the process of shaping towards a tool. The specimen exhibits deep striations on one surface which are the result of scratching with a chipped stone tool. The other specimen has had flakes removed in an irregular fashion. One face has been heavily scratched by another tool in the same fashion as the other specimen. Scratched surfaces have fine and deep striations in groups.

Ceramics

Pottery - 289

Sample: Two rim sherds, 105 body sherds and 182 highly eroded body sherds.

Group 126:
Ceramics One: Sand-tempered, smooth or cord-marked body (Figure 53, a-c).

Sample: 1 rim sherd, 61 body sherds, and 149 highly eroded sherds.

Paste:

Temper: Highly rounded, sand-sized particles, mainly quartz but with some plagioclase. Particles are generally small (.1 to 1 mm) but a few are large (up to 3 mm).

Texture: Paste ranges from friable to highly compact. In less compacted sherds lamination tends to occur parallel to the interior-exterior surfaces. More compact sherds exhibit less visible lamination. Sherds break irregularly.

Color: Color is highly variable, ranging from reddish yellow (5YR7/8) through red (2.5YR5/4). Darker shades include light brownish gray 10YR6/2) to dark reddish gray (10YR4/1), dark gray (5YR4/1), and black (5YR2/1).

Method of Manufacture: The probability is high that vessels lump modeled, as there are no straight breaks indicative of coiling, and finger marks on interiors are abundant. Specimens exhibit the use of a paddle on the exterior, as temper has been compressed. Exteriors often tend to exfoliate as a unit, and particle sizes are often smaller near the exteriors. An anvil apparently was used occasionally.

Surface Finish: Cordmarking appears on the exterior of thirty-seven sherds, nine sherds have cordmarked exteriors which were subsequently partially smoothed, and fifteen sherds have smoothed exteriors.

Decoration:

Lip: One rim sherd exhibits a plain, rounded lip. One sherd has interior/exterior rim-lip notching and crenulations with cord impressions on exterior surface.

Rim: The single rim is plain and straight from the lip toward the neck.

Body: None. Surface finishes are smooth, cordmarked, or smoothed cordmarked.

Form:

Lip: Rounded, hemispherical from lip to rim.

Rim: Straight from lip towards the neck.

Neck: Straight.

Body: Undetermined.

Group 127:
Ceramics Two: Grit-tempered, smooth or cordmarked body (Figure 53, d-f)

Sample: 6 body sherds and 3 highly eroded body sherds.

Paste:

Temper: Angular particles of quartz and plagioclase. Particles have a wide range of sizes. Most are relatively small (.5 to 1.5 mm). Origin is undetermined, although the types of materials would tend to indicate that the origin is crushed granitic material.

Texture: Paste ranges from friable to highly compact. Most sherds are relatively friable. Lamination in these sherds tends to be roughly parallel to the interior-exterior surface.

Color: Color of exteriors is brown (10YR5/4) and reddish yellow (5YR7/8). Interiors are gray (10YR4/1) to black (5YR2/1).

Method of Manufacture: The probability is high that vessels were lump modeled, as there are no straight breaks indicative of coiling. Specimens exhibit the use of a paddle on the exterior, as temper has been compressed. Exteriors often tend to exfoliate as a unit, and particle size is smaller near the exteriors.

Surface Finish: Smoothed cordmarking appears on the exterior of one sherd, five sherds have smoothed exteriors, and three sherds are too highly eroded to determine surface finish.

Decoration: Undetermined.

Form: Undetermined.

Group 128:
Ceramics Three: Sand and grit-tempered, smoothed exteriors. (Figure 43, g-i)

Sample: 20 body sherds and 30 highly eroded body sherds.

Paste:

Temper: Includes highly rounded, sand-sized particles as well as angular particles, of quartz and plagioclase. Origin of materials appears to be from sand sources as well as crushed granitic materials. Particles are generally small (.1 to 1.5 mm). A few slightly larger particles are present.

Texture: Paste ranges from friable to highly compact. Most sherds are relatively friable. In less compacted sherds, lamination tends to occur roughly parallel to the interior-exterior surfaces. More compact sherds exhibit less visible lamination. Sherds break irregularly.

Color: Color is the most highly variable characteristic, ranging from reddish yellow (5YR7/8) through red (2.5YR5/4). Interiors are usually dark from light brownish gray (10YR6/2) and dark reddish gray (10YR4/1) to black (5YR2/1).

Method of Manufacture: The probability is high that vessels were lump modeled, as there are no straight breaks indicative of coiling, and finger marks on interiors are abundant. Specimens exhibit the use of a paddle on the exterior, as temper has been compressed. Exteriors often tend to exfoliate as a unit, and particle size is generally smaller near exteriors.

Surface Finish: 20 sherds exhibit smooth exteriors and 30 sherds have been too highly eroded to determine surface finish.

Decoration: Undetermined.

Form: Undetermined.

Group 130:
<u>Ceramics</u> <u>Four</u>: Sand-tempered, incised and bossed body. (Figure 53, j-1)

Sample: 13 body sherds and 1 rim sherd.

Paste:

Temper: Highly rounded, sand-sized particles, mainly quartz but with some plagioclase. Particles are generally small (.1 to 1 mm) but a few are large (up to 3 mm).

Texture: Paste ranges from slightly friable to highly compact. Lamination tends to occur parallel to the interior-exterior surfaces. More compact sherds exhibit less visible lamination. Sherds break irregularly.

Color: Exterior colors are highly variable. Exterior colors tend toward red (2.5YR5/4) and reddish yellow (5YR7/6). Interior colors are brownish gray (10YR6/2) and black (5YR2/1).

Method of Manufacture: The probability is high that vessels were lump modeled, as there are no straight breaks indicative of coiling. Specimens exhibit the use of a paddle on the exterior, as temper has been compressed. Particle sizes of clay is often smaller near the exteriors.

Surface Finish: Cord-marking and smoothed cord-marking is present on only two sherds. The remainder appear to be on smoothed surfaces.

Decoration:

Lip: None

Rim: One rim and one near-rim sherd lack any decoration until nearly the neck. Only a couple of incised lines are present above the neck.

Body: Incising is present over much of the body. The one near-rim sherd contains punch and bosses. Incising on two sherds indicates incising perpendicular to the longitudinal axes with series of incised lines from two to ten millimeters deep. Other sherds indicate different incised patterns. Several sherds indicate some incised lines, but the small size of the sherds precludes pattern indentification. One sherd exhibits incised lines in bands with parallel bands at angles between major band units, resulting in a chevron pattern.

Form:

Lip: Rounded, hemispherical from lip to rim.

Rim: Straight from lip towards the neck.

Neck: Straight to neck, out flaring from neck.

Body: Undetermined.

Group 131
Ceramics Five: Sand-tempered, dentate stamped. (Figure 53, m)

Sample: 1 body sherd.

Paste:

Temper: Highly rounded, sand-sized particles, mainly quartz but with some plagioclase. Particles are generally small (.1 to 1 mm), but a few are larger.

Texture: Paste is fairly friable. The sherd exhibits lamination roughly parallel to the interior-exterior surfaces. Sherds break irregularly.

Color: Color on the single sherd exhibits a red exterior (2.5YR5/4) and a dark gray interior (5YR4/1).

Method of Manufacture: It appears that the vessel was lump modeled, as there are no straight breaks indicative of coiling. Specimens exhibit the use of a paddle on the exterior, as temper has been compressed. Particle size is smaller near the exterior.

Surface Finish: Smoothed.

Decoration:

Lip: Undetermined.

Rim: Undetermined.

Body: The single sherd exhibits three rows of dentate stamps. There are at least four single dentate elements within each row. The total number of dentate elements is impossible to determine as they exceed the width of the sherd.

Form: Undetermined.

Group 132
Ceramics Six: Zoned, incised and dentate stamped over cord-marked body (Figure 53, n-s).

Sample: 6 body sherds.

Paste:

Temper: Highly rounded, sand-sized particles, mainly quartz but with some plagioclase. Particles are generally small (.1 to 1 mm) with a few larger specimens.

Texture: Paste is moderately friable. Sherds exhibit lamination roughly parallel to the interior-exterior surface. More compact sherds exhibit less visible lamination. Sherds break irregularly.

Color: Exterior color is red (2.5YR5/4). Interior color is black (5YR2/1).

Method of Manufacture: It appears that the vessel was lump modeled, as there are no straight breaks indicative of coiling. Specimens exhibit the use of a paddle on the exterior, as temper has been compressed. Particle sizes are generally smaller near the exteriors.

Surface Finish: All sherds exhibit a slightly smoothed cord-marked exterior.

Decoration:

Lip: Undetermined

Rim: Undetermined.

Body: The body decoration is complex. Sherds exhibit square to rectangular incised zones. Incised lines are roughly one to two millimeters in depth. Outside of the zones, there is no decoration Interiors of zones exhibit rows of dentate stamping approximately five millimeters apart. Dentate rows exceed the width of sherds and contain greater than four dentate elements per row. The space between dentate rows is filled with incised lines at approximately a forty-five degree angle to the exterior zone incised lines.

Form: Undetermined.

Group 133:a-cc Burned Clay - 81

The specimens in this category differ from pottery only in that they lack temper. All specimens are eroded and highly irregular in shape. It is possible that some of the material may represent daub, but all lack any impressions which would allow them to be included as such.

Lithic Waste

Group 134: Chert Waste - 14,532

A total of 11,187 unmodified chert flakes and 2,299 pieces of unmodified chert shatter were recovered from the excavations. Surface material included 933 unmodified chert flakes and 106 pieces of unmodified chert shatter.

Group 135: Quartzite Waste - 194

A total of 144 unmodified quartzite flakes and 24 pieces of unmodified quartzite shatter were recovered from the excavations. An additional 14 unmodified quartzite flakes and two pieces of unmodified quartzite shatter were recovered from the surface.

Group 136: Quartz Waste - 51

A total of 9 quartz flakes and 32 pieces of unmodified quartz shatter were recovered from the excavations. An additional 9 quartz flakes and one piece of quartz shatter were recovered from the surface.

Group 137: Silicified Sediments Waste - 29

A total of 20 unmodified silicified sediments flakes and 7 pieces unmodified silicified sediments shatter were recovered from the excavations. Two additonal pieces of unmodified silicified sediments shatter were recovered from the surface.

Group 139: Argillite Waste - 3

Two argillite flakes were recovered from the excavations and one argillite flake was recovered from the surface.

Group 141: Fire-cracked Rock - 8,398

Fire-cracked rock is the term used for thermally altered stone. A total of 7,463 pieces of fire-cracked rock were recovered from the excavations. A total of 935 pieces of fire-cracked rock were recovered form the surface.

Group 142: Unmodified Stone - 2,018

The specimens in this category exhibit no intentional or unintentional cultural modification. These include largely residual materials which appear to have been unintentionally transported to the site.

TABLE 18

DISTRIBUTIONAL SUMMARY - 23MC56

	4	5	9	11	12	14	16	17	18	25	26	28	33	34	37	45	47	48	49	50	51	52	54	57	59	60	67
Xu 3000	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-
Xu 3002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 3044	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Xu 3046	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	1	-	1	-	-
Xu 3048	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 3054	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 3086	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 3088	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu 3144	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 3223	-	-	-	-	-	1	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5001	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Xu 5003	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5004	1	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-
Xu 5005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-
Xu 5006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
Xu 5007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
Xu 5009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5010	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5011	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu 5014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5015	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-
Xu 5016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5017	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Xu 5019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5020	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5021	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Xu 5022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-
Xu 5024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu 5025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5026	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	1	-	1	-	-	-	-
Xu 5027	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu 5028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Xu 5029	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Xu 5030	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Xu 5031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu 5032	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Xu 5033	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
Xu 5034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5035	1	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	1	1	-	-	-	-	1	-	-	-	-
Xu 5036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Xu 5037	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-
Xu 5038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5039	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	1	-	-	-	-
Xu [illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	1	-
Xu [illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Xu [illegible]	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
Xu [illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[illegible]	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	1

TABLE 18 (cont'd)

DISTRIBUTIONAL SUMMARY - 23MC56

	70	72	75	76	77	78	80	83	84	86	90	91	92	93	94	95	96	97	102	103	104	107	108	110
Xu 3000	-	-	-	-	1	-	-	1	2	2	-	1	-	-	1	-	1	-	-	-	1	-	1	1
Xu 3002	-	-	1	1	-	-	-	-	2	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-
Xu 3044	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 3046	-	-	-	2	-	-	-	-	-	1	-	-	1	-	1	-	-	-	-	-	-	-	-	-
Xu 3048	-	-	2	2	-	-	-	-	-	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-
Xu 3054	-	1	3	-	-	-	-	-	-	1	1	-	-	1	1	-	-	-	-	-	-	-	-	-
Xu 3086	-	-	1	1	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu 3088	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 3144	-	-	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 3223	-	-	-	1	-	1	-	-	-	-	2	1	-	1	1	-	-	-	-	-	-	-	-	-
Xu 5001	-	-	1	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5002	-	-	1	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Xu 5003	-	-	1	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5004	-	-	1	1	-	-	-	1	1	2	1	-	-	-	-	-	1	-	-	-	-	-	-	-
Xu 5005	-	-	1	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5006	-	-	2	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5007	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5008	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5009	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Xu 5010	-	-	2	-	-	-	-	-	1	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-
Xu 5011	-	-	1	-	-	-	-	1	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5012	-	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5013	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5014	-	-	-	-	-	-	-	-	-	2	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu 5015	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-	-	-	-	-
Xu 5016	-	-	1	-	1	-	-	-	-	-	-	-	-	-	1	-	2	1	-	-	-	-	-	-
Xu 5017	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
Xu 5018	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5019	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Xu 5020	-	-	-	1	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5021	-	-	1	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5022	-	-	2	1	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5024	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	1	-	-
Xu 5025	-	-	5	1	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5026	-	-	2	1	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu 5027	-	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Xu 5028	-	-	-	-	1	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-
Xu 5029	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5030	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-
Xu 5031	-	-	1	-	-	-	-	-	-	-	-	3	-	-	-	-	1	-	-	-	-	-	-	-
Xu 5032	-	-	5	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu 5033	-	-	2	-	-	-	-	-	1	5	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Xu 5034	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5035	-	-	2	-	-	-	-	-	1	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Xu 5036	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5037	-	1	3	1	-	-	-	-	-	1	-	-	2	-	-	-	-	-	-	-	-	-	-	-
Xu 5038	-	2	1	-	-	-	-	-	-	-	-	1	1	2	-	-	-	-	-	-	-	-	-	-
Xu 5039	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-
Xu 5040	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5041	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5042	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5043	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Xu 5044	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5045	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5046	-	-	1	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5047	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5048	-	-	-	-	1	-	-	-	1	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-
Xu 5049	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5052	-	-	-	1	-	-	-	-	2	-	-	1	-	-	-	-	-	-	2	-	-	-	-	-
Xu 5053	1	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	-	-
Xu 5054	-	-	-	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-
Xu 5055	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xu 5056	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surface	-	-	17	7	6	16	11	2	2	8	18	14	4	10	3	-	4	2	1	-	-	4	-	4

TABLE 18 (cont'd)

DISTRIBUTIONAL SUMMARY - 23MC56

	115	117	118	119	121	122	124	126	133	134	135	136	137	139	141	142
Xu 3000	-	1	-	3	1	-	-	2	-	272	2	-	-	-	51	286
Xu 3002	-	-	1	3	-	-	-	9	1	281	8	-	-	-	106	318
Xu 3044	-	-	-	-	-	-	-	-	-	168	1	1	-	-	48	277
Xu 3046	-	-	-	3	-	-	-	1	-	266	-	3	-	-	98	263
Xu 3048	-	1	-	6	-	-	-	3	1	239	-	-	-	-	183	278
Xu 3054	-	1	-	7	-	-	-	10	-	338	5	1	-	-	252	300
Xu 3086	-	3	-	4	-	1	-	2	-	350	3	-	-	-	195	262
Xu 3088	-	1	-	3	-	-	-	2	-	188	2	-	-	-	86	217
Xu 3144	-	-	-	2	-	-	-	4	-	214	4	2	-	-	72	244
Xu 3223	-	1	-	2	-	-	-	2	-	252	2	-	-	-	181	271
Xu 5001	-	-	-	1	-	-	-	-	5	131	1	-	-	-	76	150
Xu 5002	-	-	-	-	-	-	-	3	8	106	2	-	-	-	43	245
Xu 5003	-	-	-	-	-	-	-	9	3	197	2	1	1	-	72	170
Xu 5004	-	-	-	-	-	-	-	6	3	263	3	2	-	-	88	179
Xu 5005	-	-	-	2	-	-	-	8	-	206	4	2	-	-	130	152
Xu 5006	-	-	-	-	-	-	-	6	1	192	5	1	-	-	74	183
Xu 5007	-	-	-	2	-	-	-	-	2	123	1	1	-	-	88	169
Xu 5008	-	-	-	-	-	-	-	3	2	256	-	-	-	-	138	185
Xu 5009	-	1	-	-	-	-	-	2	2	167	-	1	-	-	135	185
Xu 5010	-	-	-	1	-	-	-	2	2	231	-	-	1	-	123	143
Xu 5011	-	-	-	-	-	-	-	15	3	281	3	-	-	-	109	203
Xu 5012	-	-	-	3	-	-	-	5	-	325	2	1	-	-	100	251
Xu 5013	-	-	-	1	-	-	-	3	-	187	2	-	-	-	97	196
Xu 5014	-	-	-	-	-	-	-	2	-	101	1	-	-	-	87	188
Xu 5015	-	-	-	-	-	-	-	1	-	206	2	1	-	1	83	207
Xu 5016	-	-	-	-	-	-	-	2	-	171	1	1	1	-	82	131
Xu 5017	-	-	-	1	-	-	-	15	4	177	2	1	-	-	113	198
Xu 5018	-	-	-	-	-	-	-	35	2	232	1	-	4	-	89	180
Xu 5019	-	-	-	4	-	-	-	10	1	358	5	2	-	-	139	343
Xu 5020	-	-	-	-	-	-	-	3	-	190	-	-	-	-	77	215
Xu 5021	-	-	-	-	-	-	-	4	1	153	1	-	-	-	82	206
Xu 5022	-	-	-	1	-	-	-	6	2	153	-	1	1	-	94	217
Xu 5024	-	-	-	1	-	-	-	10	1	202	6	-	-	-	127	229
Xu 5025	-	-	-	-	-	-	-	6	-	226	-	-	2	-	120	305
Xu 5026	-	-	-	1	-	-	-	3	1	283	1	-	1	-	90	275
Xu 5027	-	-	-	-	-	-	-	3	-	232	3	-	1	1	62	217
Xu 5028	-	-	-	2	-	-	-	6	-	212	9	-	2	-	93	287
Xu 5029	-	-	-	2	-	-	-	1	-	128	2	2	1	-	121	214
Xu 5030	-	-	-	1	-	-	-	4	1	175	4	4	-	-	152	205
Xu 5031	-	-	-	-	-	-	-	5	1	173	4	-	-	-	122	226
Xu 5032	-	-	-	-	-	-	-	6	2	247	-	-	2	-	191	349
Xu 5033	-	1	-	3	-	-	-	4	-	286	-	-	-	-	138	415
Xu 5034	-	-	-	1	-	-	-	-	-	181	5	2	-	-	51	251
Xu 5035	-	-	-	-	-	-	-	2	-	304	4	2	-	-	132	355
Xu 5036	-	-	-	1	-	-	-	6	-	205	2	2	-	-	161	258
Xu 5037	-	1	-	2	-	-	-	2	-	227	2	1	-	-	151	238
Xu 5038	-	-	-	1	-	-	-	1	-	214	4	-	1	-	209	328
Xu 5039	-	-	-	1	-	-	-	1	-	261	5	1	1	-	123	356
Xu 5040	-	1	-	1	-	-	-	1	1	273	8	-	1	-	128	347
Xu 5041	-	-	-	-	-	-	-	1	1	189	7	1	1	-	115	350
Xu 5042	-	-	-	-	-	-	-	2	-	209	3	1	-	-	62	259
Xu 5043	-	-	-	1	-	-	-	2	-	118	1	-	-	-	91	116
Xu 5044	-	-	-	2		-	-	-	-	101	1	-	-	-	94	154
Xu 5045	-	-	-	5	-	-	-	3	1	222	1	-	1	-	187	291
Xu 5046	1	-	-	3	-	-	-	3	11	296	6	-	-	-	258	303
Xu 5047	-	-	-	2	-	-	-	5	4	275	8	-	-	-	181	365
Xu 5048	-	-	-	-	-	-	-	2	1	233	6	-	-	-	107	426
Xu 5049	-	-	-	-	-	-	-	5	1	190	4	-	-	-	87	317
Xu 505[illegible]	-	-	-	-	-	-	-	7	-	247	1	-	-	-	196	280
Xu 5053	-	-	-	1	-	-	-	6	-	210	4	-	-	-	158	274
Xu 5054	-	1	-	-	-	-	-	3	-	249	2	-	-	-	226	399
Xu 5055	-	1	-	-	-	-	-	4	-	155	3	-	1	-	88	388
Xu 5056		-	-	-	-	-	-	1	-	57	2	1	-	-	52	300
Surface	-	2	1	-	-	-	1	3	-	1039	16	10	2	1	935	138

It is difficult to make comparisons with the specimen in Group 16. No directly related materials were found in the literature. The general morphology of the specimen indicates, however, that is probably related to Dalton points. It resembles in some respects Dalton points recovered from the lower components at Graham Cave (Logan 1952:27-30; and Klippel 1971:21; Fig. 10) and at Arnold Research Cave (Shippee 1966). Open sites with Dalton-like materials include the Walters Site (Biggs et al. 1970:Fig. 9) and the Dalton site (Chapman 1975:135-136). A radiocarbon date on the lowest level of the Pigeon Roost Creek site was 8500 ± 220 B.P. (O'Brien and Warren 1979:234). This level included Dalton materials. Dates on the Dalton component of Graham Cave dated by Chapman (1957:47) ranged from 8830 ± 500 B.P from the Zone III - Zone IV contact to 9700 ± 500 B.P. in Zone IV. Klippel's (1971:22) dates ranged from 9290 ± 300 B.P. to 9470 ± 400 B.P. The number of dates from 8000 to 7000 B.C. led Chapman (1975) to propose a Dalton period. Dalton points appear to range from ca. 8000 B.C. to as late as perhaps 5000 B.C. Again, the point in Group 16 does not fit well with the type Dalton, but appears morphologically to fit better within that style than with any other. The point is estimated to be an Early Archaic variant.

The specimen in Group 14 is also somewhat difficult to compare with the other reported materials. Comparable material is somewhat meager. The specimen is almost identical to that illustrated by Marshall (1963:6; Fig. 3, k-7) in both shape, basal thinning, and degree of reworking. Somewhat similar material is illustrated by Roper (1977:Pl. I, c-d). Two of the three lobed points not classified as "Rice lobed" came from sites with other Middle Archaic forms (Roper 1977:46). It is possible that the specimen in this category is related to Rice Lobed but differs significantly from the type definition (Chapman 1975:254). The specimen exhibits a narrower stem and blade and lacks the oblique shoulders. The specimen also appears to be related to Big Sandy Notched points except that the shoulders on this specimen are more oblique than the type definition (Chapman 1975:242). Lobate-based forms were recovered from Graham Cave (Chapman 1952:Fig. 9, F) and are included in the type definition. Both of these types appear to be most common in Middle Archaic contexts (Chapman 1975).

The specimens in Group 11 are similar to a number of published groups. The type is common in the Prairie Peninsula, and specimens are found throughout the Midwest.

They appear in surface collections from northwestern Missouri (Shippee 1967:30, 33; Fig. 19, b; 56; Fig. 34, c-d; Chomko and Griffin 1975:Fig. 3, h; Vehik 1971:20-21; Fig. 3, h; and Weichman 1976a:Pl. 1, c, m; Pl. 5, a-b) and northeastern Missouri (Eichenberger 1944:Pl. 7, row 5; and Henning 1961:173-174; Fig. 28, b-c). Excavated sites in northeastern Missouri with similar points include Graham Cave (Logan 1952:33; Pl. III, a-b; and Klippel 1971:26; Fig. 14, c-d) where they appear throughout the sequence, the Collins site (Klippel 197:18; Fig. 13, 3r-3v), and the Booth site (Klippel 1968:10; Pl. 4B, a). In Illnois they appear to be common in Archaic contexts, and side-notched forms at Modoc Rock Shelter (Fowler 1959a) appear most commonly from he Middle Archaic period. Similar materials from Horizon I of the Cherokee Sewer Site (Anderson 1974:69; Fig. 45, a) yielded dates of 5950 $\pm$ 80 B.P. and 6300 $\pm$ 90 B.P. (Shutler and Anderson 1974:9). Side-notched forms appear throughout the Archaic in Iowa from 8500 - 4500 B.P. and led Anderson and Shutler (1974:161-167) to propose a "Prairie Archaic" which is characterized by side-notched forms. Chapman (1975:242) notes that the form Big Sandy Notched occurs from about 5000 - 500 B.C. They appear to have largely Middle Archaic contexts in southern and central Missouri and appear to be the most distinctive type of that period. Similar forms appear in Early Woodland contexts in Illinois and possibly eastern Missouri. It appears, however, that this and related forms are most characteristic of Early/Middle Archaic contexts in the reservoir area.

The projectile points in Group 12 are similar to a variety of types and are common throughout the Prairie Peninsula. All appear to be part of the Big Sandy Complex as defined by Lewis and Kneberg (1959). Concave-based forms appear throughout Missouri are reported from Arnold Research Cave, the White River complex, Graham Cave, and Hidden Valley Shelter (Chapman 1975:Fig. 6-14, a; Fig. 7-6, a-b; Fib. 7-14, e-h; and 7-16, c-d). They appear throughout northern Missouri in surface collections (Chomko and Griffin 1975:Fig. 5, b; Eichenberger 1944:Pl. I, row 5; Henning 1961:173-174; Fig. 26, SN-4, SN-5; and Shields 1966b:118, 124) and from excavated sites such as Graham Cave (Logan 1952:30; Pl. V, h-j; Klippel 1971:26) and the Collins site (Klippel 1972:18; Fig. 13, 3a-3n). Again, as with the straight-based, side-notched points, these forms appear to be dominant throughout the Middle Archaic period in central Missouri. Radiocarbon dates from the Middle Archaic levels at the Pigeon Roost Creek site in Cannon reservoir appear to average 3960 $\pm$ 168 B.C. for the upper cluster and a mean date of 4394 $\mp$ 92 B.C. for the lower cluster (O'Brien and Warren 1979). Both this level and a lower undated level separated by sterile soil contained only Big Sandy Complex points. Although the lower level is postulated as being Middle Archaic, it is possible that it represents an Early Archaic component. If this were true then Anderson and Shutler's proposed "Prairie Archaic" may be present throughout most of northern Missouri for the Early/Middle Archaic periods.

The specimen in Group 18 is difficult to compare directly with other materials due to its apparent reworked condition. Similar material is illustrated by Wood (1961:131, Cat. Z), Chomko (1976:36; Fig. 18, f), Logan (1952:30; Pl. V, d), and Chomko and Griffin (1975:Fig. 3, n; Fig. 5, d). Some of these (particularly those illustrated by Logan 1952) appear to be reworked forms as well. Their general comparability to stemmed forms, particularly Stone Square Stemmed variants below the reworked blade, would tend to indicate a similar chronological placement. They appear most commonly on sites with Late Archaic components in the reservoir area (Grantham 1977:95) and appear to represent reworked stemmed varieties.

The projectile point in Group 17 appears to be similar to the type Agate Basin Lanceolate as defined by Chapman (1975:241-242) with the exception of basal grinding. The form appears to be widespread in Missouri with a fairly long temporal span. Chapman (1975:241) notes their occurrence in the West as a Plano form and dates somewhat earlier (8000-6000 B.C.). Wormington (1957:141, 269) defined Agate Basin points, and this specimen again appears to be similar except for the lack of horizontal parallel flaking and the lack of grinding on the lower lateral margins or base. Dates from the Cherokee Sewer Site of 8500 + 200 B.P and 8570 + 200 B.P. on Horizon III material which included an Agate Basin-like point (Shutler and Anderson 1974:11) would place the maerial near the end of the Plano in northwestern Iowa. Agate Basin-like points are present in Missouri from the Dalton Complex of Arnold Research Cave (Chapman 1975:Fig. 5-17, a); from Early Archaic contexts at the Dalton site (Chapman 1975:Fig. 6-8, row B) and Arnold Research Cave (Chapman 1975:Fig. 6-14, d-e); and from Middle Archaic components in Rice Shelter, Rodgers Shelter, and Arnold Research Cave (Chapman 1975:242).

The specimens in Group 9 are similar to the type Stone Square Stemmed. Although Stone Square Stemmed is generally somewhat broader across the base than these specimens (Chapman 1975:257), they do exhibit similarities to other square stemmed forms from Late Archaic sites; the Pauling site (Chapman 1975:Fig. 8-19, g), the James River sites (Chapman 1975:Fig. 8-1, b; 8-4, a; and 8-5, a-b), and the Booth site (Klippel 1968:9; Pl. 3B, a-f). A similar point from the Phillips Spring site (Chomko 1976:34; Fig. 17, l) comes from Stratum D. This stratum appears to be the lower of two Late Archaic components with dates of 3050 to 2910 B.P. (Chomko 1976:108). Similar specimens from northeast Missouri are reported by Henning (1961:142) and appear to be fairly common. Although appearing to fit well with the general type Stone Square Stemmed, the temporal range within the reservoir has not yet been firmly placed. It does appear, however, that the incidence of these square stemmed forms appears to be higher on Late Archaic sites than in any other time period.

The specimens in Group 4 are somewhat ubiquitous. Although having some affinities for the type Stone Square Stemmed (Chapman 1975:257; Klippel 1972:15-16; Fig. 9, a-h), bases tend to be somewhat narrower and slightly more expanding. Variants of this basic form (Chapman 1975:Fig. 8-9, c; Henning 1961:146; Fig. 28, n; Chomko 1976:34, Fig. 17, m) are closer in shape, but these forms also have wider bases than the specimens in these categories. Shields (1966b:115-116, 121) illustrates similar points, but these lack the more pronounced shoulders of the specimens in these categories. The closest comparable material appears to come from the Booth site (Klippel 1968:8; Pl. 3A, a-b). They also bear a resemblance to some Etley-like variants as illustrated by Chapman (1975:Fig. 8-19, f, from the Pauling site and Fig. 8-15, a, from the Cuivre River Ceremonial component. It appears probable that these represent related forms. It is possible that, due to the smaller blank material or from resharpening, these forms may be smaller than and less characteristic of Etley Stemmed forms. Other variants recovered from sites on which the type occurs (Grantham 1977) and Fowler's notation (1957:17) that the trend towards corner-notched and/or expanding stem varities in the Late Archaic period would tend to strengthen a Late Archaic chronological assignment.

The specimen in Group 5 appears to be relatively unique in the literature. The specimen appears to be an Etley-like variant as well. The closest material appears to be represented at the Booth site (Klippel 1969:7; Fig. 3, B). There does not appear to be any other similar material in the literature examined. It appears that the specimen fits quite well into the Late Archaic based on general morphology and its relative resemblance to Etley-like materials.

The specimens in Group 26 are of uncertain affiliation. They appear to be similar to specimens in Group 4 except for basal configuration. They appear to have some general affinities for Etley-like materials although they do no not conform well with the type definition (Chapman 1975:246).

They also appear to be related to some convex-based Woodland materials from elsewhere in the reservoir area. They appear similar to Group 24 points (Grantham 1977:100-101), and it is estimated that they are part of a Woodland occupation on the site.

The specimens in Group 28 are common throughout Missouri. These are not unlike the type Manker Notched and Snyders Notched (White 1968:179). Similar materials were recovered in a number of surveys in northern Missouri (Chomko and Griffin 1975:Fig. 3, a; Vehik 1971:Fig. 3, k; Henning 1961:140, 174; Shields 1966b:115; Fig. 20; and Eichenberger 1944: Convex-based forms No. 1, No. 2, and No. 21). Material from sites with somewhat better chronological control include Graham Cave (Logan 1952:35; Pl. VI, k, l; and Klippel 1971:27; Fig. 12, j, k) and the Collins site (Klippel 1972:16-18; Fig. 12, 2at and 2aw). In the Kansas City area (Shippee 1967) similar material occurs on Middle Woodland sites and possibly into the Late Woodland. White (1968) indicates that both Snyders and Manker Notched points occur from approximately 250 B.C. to as late as A.D. 250 in the Illinois River valley. Bell (1976:34) indicates a range of approximately A.D. 100 - 350 for these forms in the Kansas City area. Although apparently occurring earlier and later than Middle Woodland, the form is believed to be more characteristic of the Middle Woodland period.

The specimens in Group 33 and 34 are somewhat diverse. They all appear to be related and may be generally compared with other types. They appear to be intermediate between Norton Corner-notched or Manker Notched (White 1968:71) and later Koster Corner-notched (Perino 1971a:100). The specimens in this category appear to fit well with White's (1968) subtriangular varieties, which appear to date from late Middle Woodland through early Late Woodland. They are larger than the type Koster Corner-notched, but the method of manufacture and the blank material is similar. The larger Norton and Manker Notched points have generally passed through a preform stage and exhibit primary and secondary flaking. Thus, these specimens appear not only to be intermediate in size but also in manufacturing technology. It is felt that these materials fit well morphologically with White's (1968) subtriangular varieties and that her chronological estimate of late Middle Woodland to early Late Woodland is probably correct for the chronological placement of these specimens.

The specimen in Group 37 appears to be most similar to the type Koster Corner-notched (Perino 1971a:100). Perino estimated that the type occurred no earlier than A.D. 600 or 650 and lasted to approximately A.D. 900. The form appears to be common in Illinois (Perino 1973:166) and northeastern Missouri (Eichenberger 1939; Eichenberger 1944:Pl. III; Eichenberger 1956; Fig. 4; Henning 1961:139, 175; and Hunt 1976). Some related materials may occur further west (Weichman 1976a:Pl. 3, a; Vehik 1971:Fig. 2, a; and Shippee 1967:Fig. 35, a; Fig. 40, k. 1; and Fig. 45, f). Perino (1971a) estimated that a rough ordering of micro-points in western Illinois should be Klunk, Koster, and Schild, with unnotched triangular points (Madison) occurring later in time. In seriating the ceramics from Cannon reservoir, however, Hunt (1976) observed exactly the opposite order. The type almost certainly post-dates Middle Woodland and probably early Late Woodland as well. Perino's (1971a) estimate is considered to be essentially correct.

Thus the projectile points indicate that there are two major components and two minor components on the site. The thirteen points in Groups 11, 12, 14, 16, 17, and 6 appear to belong to an Early/Middle Archaic component on the site. Only the projectile pont in Group 16 appears to belong clearly to an Early Archaic chronological placement. Its relative stratigraphic position would tend to indicate a curated specimen, however. An additional two side-notched and lobed-based points were recovered from the test excavations on the site (Grantham 1979) which appear to belong to an Early/Middle Archaic component on the site. The twenty-three projectile points in Groups 4, 5, 9, and 8 appear to belong to a Late Archaic component on the site. This is supported by the recovery of a square-stemmed point from the surface of the site (Grantham 1977) and six points from test excavations on the site (Grantham 1979). Some of the points classified as belonging to a Late Archaic component might represent Early Woodland materials since Early Woodland ceramics have been recovered from the site. Unfortunately an insufficient amount of work on the Early Woodland has been done in northern Missouri, and these are not easily separated. The specimens in Groups 25, 26, and 28 appear to indicate a Middle Woodland component; the specimens in Groups 33 and 34 would tend to indicate a late Middle Woodland or early Late Woodland component; and specimen in Group 37 would tend to indicate a Late Woodland component. The numbers of these points indicate that all of the Woodland components are relativley minor.

The relative stratigraphy of the points is fairly straight-forward. The Early/Middle Archaic component is contained in below plowzone contexts in the center of the site and deposits thin outward until this component is contained within the plowzone as well. Nine of the thirteen points were recovered in below plowzone contexts. The remainder of these materials were recovered from the surface outside the excavations. None were recovered in plowzone contexts within the excavated area. Most of the Late Archaic component appears to be contained in below plowzone contexts in the excavated area. Eighteen of the thirty Late Archaic points were recovered in below plowzone contexts. Four were recovered from the surface, and eight were recovered from the plowzone in the excavations. The upper portion of the Late Archaic component thus appears to have been truncated by the plowzone. Only one of the Woodland points was recovered from below the plowzone. Two were surface finds, and the other three specimens were recovered from the plowzone.

The number of projectile point fragments does not appear to be particularly informative except that the number of distal point fragments is relatively low given the number of proximal and medial point fragments. This would not be unexpected if fracture occurred in use as projectile points. Recovery of distal fragments would then be expected to be rather low. The large number of points does give a good indication of the relative importance of hunting in the economy. The flake scrapers in Group 51 and the hafted scrapers in Group 52 indicate that scraping activities occurred, but the number of these tools is relatively low. The hafted scrapers appear to be reworked proximal projectile point fragments. All appear to be Late Archaic point types and are similar to the points in Group 9. Specimen 52:d is of uncertain chronological placement. We do not, however, have any indication of the amount of time which passed between functions. Two of the specimens were recovered from below plowzone contexts, and this agrees well with the percentage of Late Archaic point distributions. Thus, we would expect that most of the specimens are part of a Late Archaic assemblage and that a very short period passed between functions.

The drill-like implements in Group 54 indicate another activity on the site. The specimens exhibit little or no wear on the distal ends, and little can be said of associated activities. It is assumed that the specimens were used as drills or as reamers. Their number is also relatively low given the total number of tools recovered. Four specimens were recovered from below plowzone contexts, three from the plowzone, and one from the surface. They do not appear to be confined to any chronological period.

Bifaces tend to differ from other sites. Specimens exhibit more wear than is often the case. The specimen in Group 59 appears to have been a completed and used tool. Edge-rounding and step-fracturing on the margins tends to indicate heavy use as a cutting tool. The specimen in Group

60 is somewhat enigmatic. The degree of edge damage is severe, and it is doubtful that it could have occurred through usage and was probably ground. The reason for the modification is unknown. The specimens in Groups 62 and 72 lack any observable wear and probably represent preform fragments. The specimen in Group 70 exhibits considerable edge damage. Edge damage consists of edge-rounding and step-fracturing. It also appears to have been a completed and utilized tool, but the function of the specimen is unknown. Edge damage on the lateral margins appears to have resulted from hafting. The large number of miscellaneous biface fragments (Groups 75 and 76) as well as the fragmentary nature of almost all chert tools illustrates a long use-life for tools and heavy reuse of tools until too fragmentary to be usable. Numerous fragments exhibit attempts to repair or rework the specimens. Reuse of even biface fragments (Group 57) is apparent. Attempts to work even small and blocky chert can be seen in the miscellaneous worked chert (Group 83).

Flake tools (Groups 84 and 86) are not numerous when compared with the larger numbers of other tools and the greater number of such incidental tools common in other areas. The number of such tools is very low when compared with other sites in the area (cf. 23MC55). Both retouched and utilized flakes indicate that cutting activities were dominant. It appears, as is often the case in the reservoir area, that the relatively small number of incidental tools is the result of the relatively small size of chert waste. In general, most of the chert flakes larger than one-half inch have been utilized. Unlike 23MC55, however, there were chert flakes larger than that which were not utilized. The presence of chert cores (Groups 77, 78, and 80) indicates the use of local sources of raw materials. The number of these is relatively low and indicates that little reliance was placed on local materials. The amount of chert waste, quartzite waste, quartz waste, and silicified sediments waste is fairly high for sites in the area. The use of the latter three types of stone also indicates use of local materials. The chert waste indicates a heavier reliance on non-local cherts. Approximately sixty to sixty-five percent of the total chert waste appears to be non-local in origin.

The most outstanding aspect of the total tool assemblage is the large number of ground and pecked stone tools. Sixty-nine percent of the total morphologically recognizable tools belong to this class. Specimens in Groups 90, 91, 93, 94, 95, 96, 107, and 108 appear to be tools connected with plant processing. Some of the specimens appear to have been utilized for other functions as well. Group 92 appears to be a multifunctional category.

Size, shape, and degree of edge damage vary considerably. Edge wear grades from light to heavy with heavier edge damage usually occurring on larger specimens. A number of the specimens exhibit wear characterized by only light edge crushing and appear to have wear similar to wear on the faces of specimens in Group 90. Some of the specimens may be part of plant processing as well. The specimens in Group 97 are chert cores which were subsequently utilized as hammerstones. All of the specimens exhibit wear heavier in nature than that in Group 92. Specimens exhibit a heavier degree of edge shattering and appear to have been utilized in direct contact with dense materials. The specimens may have been part of the chert reduction process.

The specimens in Groups 102 and 103 indicate at least two functions. They do not appear to be connected with plant processing. All specimens exhibit V-shaped grooves on the surfaces and appear to have resulted from sharpening of small, narrow objects (e.g. awls). Specimen 103:a exhibits smooth surfaces on three faces and appears to have used to smooth a large object. The specimens in Group 110 represent incidental tools much the same as utilized flakes. Specimens were not intentionally modified. The first subcategory consists of larger, thicker fragments with moderate to heavy edge damage and appear to have been used in a chopping motion. The specimens in the second subcategory are thinner and exhibit less heavy edge damage. These appear to have been utilized in a cutting motion. The specimens in Group 104 do not appear to be involved in a tool-shaping process. Both exhibit flake removal, but specimens appear to be more similar to cores.

Hematite appears to have been altered for a variety of purposes. The hematite axe in Group 115 appears to have been chipped and then ground into shape. It exhibits a full groove around the margins. The specimen was located within Feature 8, Prime in association with a Big Sandy projectile point and appears to be part of the Early/Middle Archaic assemblage. The hematite in Groups 117, 118, 119, 121, and 122 has been variously altered. The ground specimen exhibits one flat, lightly ground surface and appears to have been ground for pigment. Only one of the chipped hematite specimens appears to have been flaked as part of a tool-shaping process. The remainder of the specimens are irregularly flaked, and the reason for the modification is unknown. One of the specimens in the chipped and ground subcategory appears to have been flaked as part of a tool-shaping process while the other is irregular. Both specimens have surfaces with deep striations and appear to have been scratched with another tool. The reason for the alteration appears to have been for pigment. Hematite flakes appear to have been removed as part of a tool-shaping process or simply for cortex removal.

The ceramics in Groups 126, 127, 128, 130, 131, and 132 are extremely diverse. Group 126 appears on a number of sites in the area (cf. Grantham 1979). The paste, temper, and surface finish appear to be most similar to Weaver wares. Since none of the sherds are decorated, this is a somewhat tenuous assignment. The single rim sherd is undecorated. Although this is not usually characteristic of Weaver wares, similar ceramics from 23MC65 (Grantham 1979:116) often have plain rims. If these ceramics are Weaver wares, then an early Late Woodland period assignment appears probably based on the ratio of smoothed exteriors to cordmarked exteriors. At 23MC70 (Grantham 1979:349) ceramics were relatively stratified, and these ceramics were uppermost in the relative stratigraphy.

Group 127 does not appear to be well represented in the reservoir area. Only two sites have yielded similar ceramics. They were recovered from the surface of 23MC298 which contains a major Middle Woodland assemblage and at 23MC70 (Grantham 1979:336-337). At 23MC70, crushed granite-tempered ceramics occurred below Weaver wares in the relative stratigraphy. These ceramics do not appear to be particularly diagnositc. They differ from the other ceramics principally in temper. It is believed that these ceramics are principally Middle Woodland due to their limited occurrence on sites with Middle Woodland assemblages and their relative stratigraphy at 23MC70.

Group 128 ceramics appear to be intermediate between Groups 126 and 127. They exhibit similar characteristics to both and differ principally in temper. They appear to be an early form of Weaver wares, but the lack of any rim or near-rim sherds makes this highly tenuous. The proportion of smoothed exteriors would also indicate that this is a transitionary form in the area. It is estimated to be late Middle Woodland to early Late Woodland.

The specimens in Group 130 are only slightly more comparable to materials outside the immediate reservoir area. The type appears to be closest to Black Sand Incised sherds from Illinois (cf. Griffin 1952). Similar materials appear to occur throughout much of northeastern Missouri (Chapman 1980). Although other ceramics in the area have been classified as Black Sand Incised (Grantham 1979), the ceramics recovered from 23MC65 and 23MC70 appear to be closer to Morton Incised (Griffin 1952:100). Morton Incised is more typically characterized by incised lines over cordmarked surfaces. Lines are generally closely spaced and arranged in a series of right and left oblique groups resulting in a herringbone pattern. The ceramics in this type appears to be close to the original definition of Black Sand Incised (Griffin 1952:98). Decorative features of Black Sand Incised includes straight oblique and horizontal lines covering rims and down bodies. Incised lines were placed over a cordmarked surface finish. Only a small proportion of the upper rims are decorated with incised lines. Another feature of Black Sand is a series of bosses from two to four centimeters below the lip. Both Black Sand Incised and Morton Incised are Early Woodland ceramics.

The specimens in Groups 131 and 132 appear to be similar to the type Havana Zoned, dentate variety (Griffin 1952:105-107). Havana Zoned is particularly common in Illinois (Griffin 1952:106). It is also common in the Kansas City Hopewell sites (Shippee 1967), in the Big Bend area (Kay 1975), and in the St. Louis area (Blake 1942). Havana Zoned is a Middle Woodland ceramic type. Griffin (1952:106) indicates that the type is common from early Middle Woodland but declined and largely abandoned prior to late Middle Woodland.

The amount of fire-cracked rock recovered is considerably lower than that recovered on most sites in the area. The fire-cracked rock matches closely the percentages of stone types recovered from the river just north of the site. Except for the obvious selection of stone types for tools, there appears to have been little or no cultural selectivity of stone for use as heat-retaining material.

The feature record in the excavations contain several different feature types. Features 4, 6, and 9 are small irregular features containing small amounts of wood charcoal and decayed organics. The function of these features is unknown, although they are heat-related. Based on the level of pit origin and feature contents, Feature 4 appears to be Late Archaic, and Feature 6 is a Woodland feature. Feature 9 is of unknown age, although it is estimated to be Late Archaic as well, based on the level of the pit origin. Feature 5 is a cache of ground and pecked stone. Caching of materials appears to be common in the reservoir area. A cache of chert hammerstones was recovered from 23MC65 (Grantham 1979:92) and a cache of chert blanks were recovered from 23MC149. Feature 7 was a large basin-shaped pit with a deeper conical pit near the center. The pit contained large quantities of charred nut shells. A number of pecked stones were in close association with the feature. All nut shells were charred after fracture, and it appears that the nuts were cracked and then discarded into the feature where they were charred. It would thus appear that the inclusion of the shells is not a functional connection but rather that the function occurred around the feature and the feature represents the final locus of discard.

Feature 8 is by far the most interesting feature and encompasses a large portion of the excavations. The feature appears to represent a structure which was burned. The entire fire-discolored area was given the designation Feature 8 and the more heavily discolored area was designated Feature 8, Prime. Features 8,a through 8,i were initially thought to be postmolds, but the extreme shallow nature of these makes it highly questionable. The age of the structure cannot adequately be ascertained. No diagnostic material was recovered from what appears to have been the floor. Within the discolored area a straight-based, side-notched point and a full-grooved hematite axe were recovered. Both of these appear to be part of the Early/Middle Archaic component. These were, however, recovered some twelve to fifteen centimeters below the level of the floor of the structure. It appears that these materials predate the structure. The structure appears to fall within the Late Archaic portion of the relative stratigraphy. There are no traces of a pit outline nor any ceramics on the floor of the burned structure and it is doubtful that the structure is Woodland.

In summary, the site appears to contain two major components, Early/Middle Archaic and Late Archaic. The projectile points and ceramics indicate that there are Early Woodland, Middle Woodland, and Late Woodland components as well. The Woodland components are very shallow and relatively little material was recovered from these components. Only the Early/Middle Archaic and part of the Late Archaic components are contained below the plowzone. Most of the features, including the structure, appear to date from the Late Archaic component. Only Feature 6 appears to date to the Woodland components. Charcoal samples were collected for radiocarbon assey, but samples have not yet been dated. The site appears to be a large fall seasonal site. The numbers of ground and pecked stone tools constitutes over two-thirds of the morphologically recognizable tools. The presence of an apparently substantial structure may tend to indicate that the site was occupied through the winter as well. The presence of charred hazel nut shells in Feature 7 would indicate a late summer through fall occupancy with perhaps a longer period of occupation. The rest of the features are of unknown function although all appear to have been fire-related.

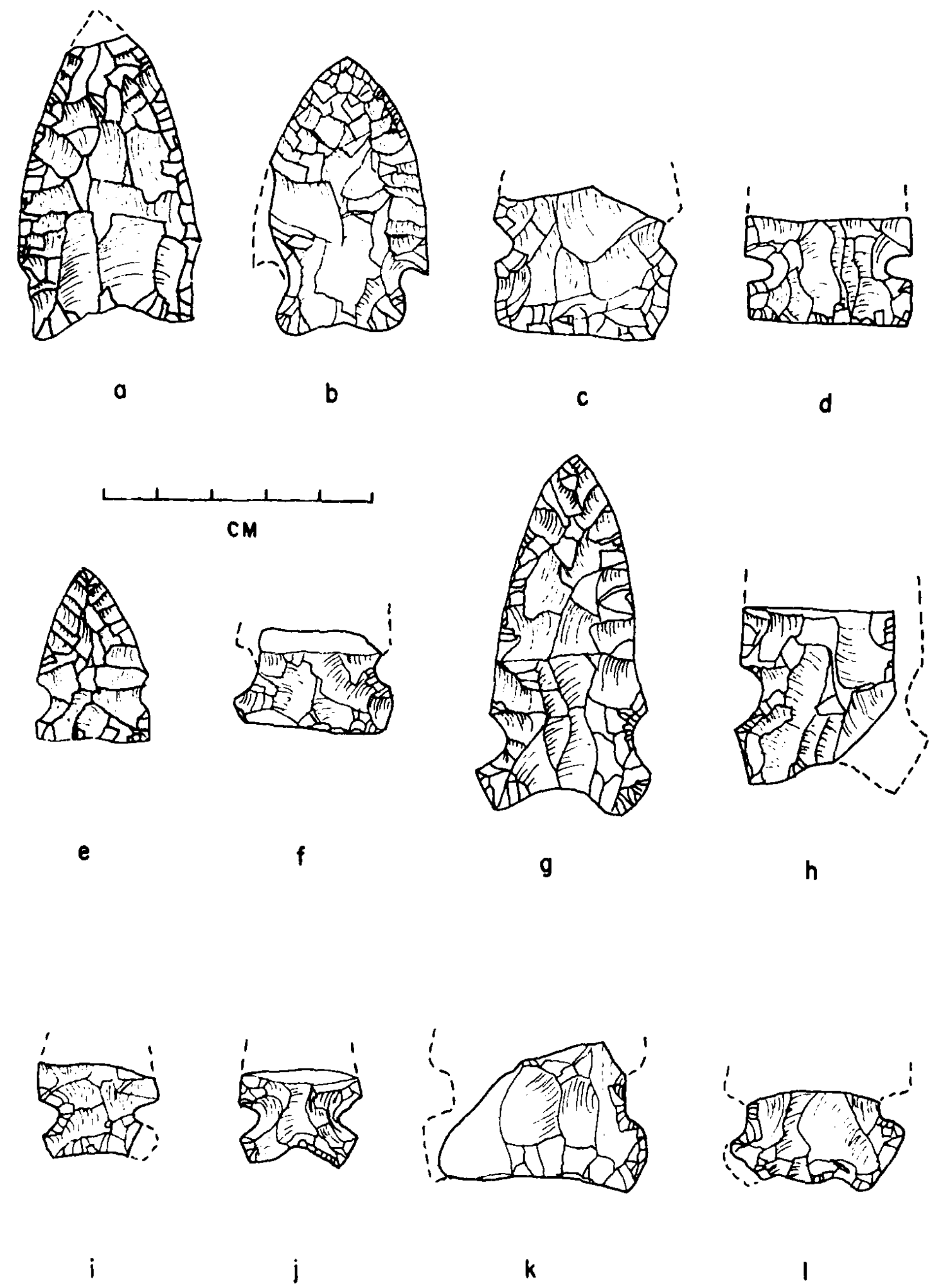


Figure 31. 23MC56 Artifacts. Projectile Points (a) Group 16, (b) Group 14, (c-f) Group 11, (g-l) Group 12.

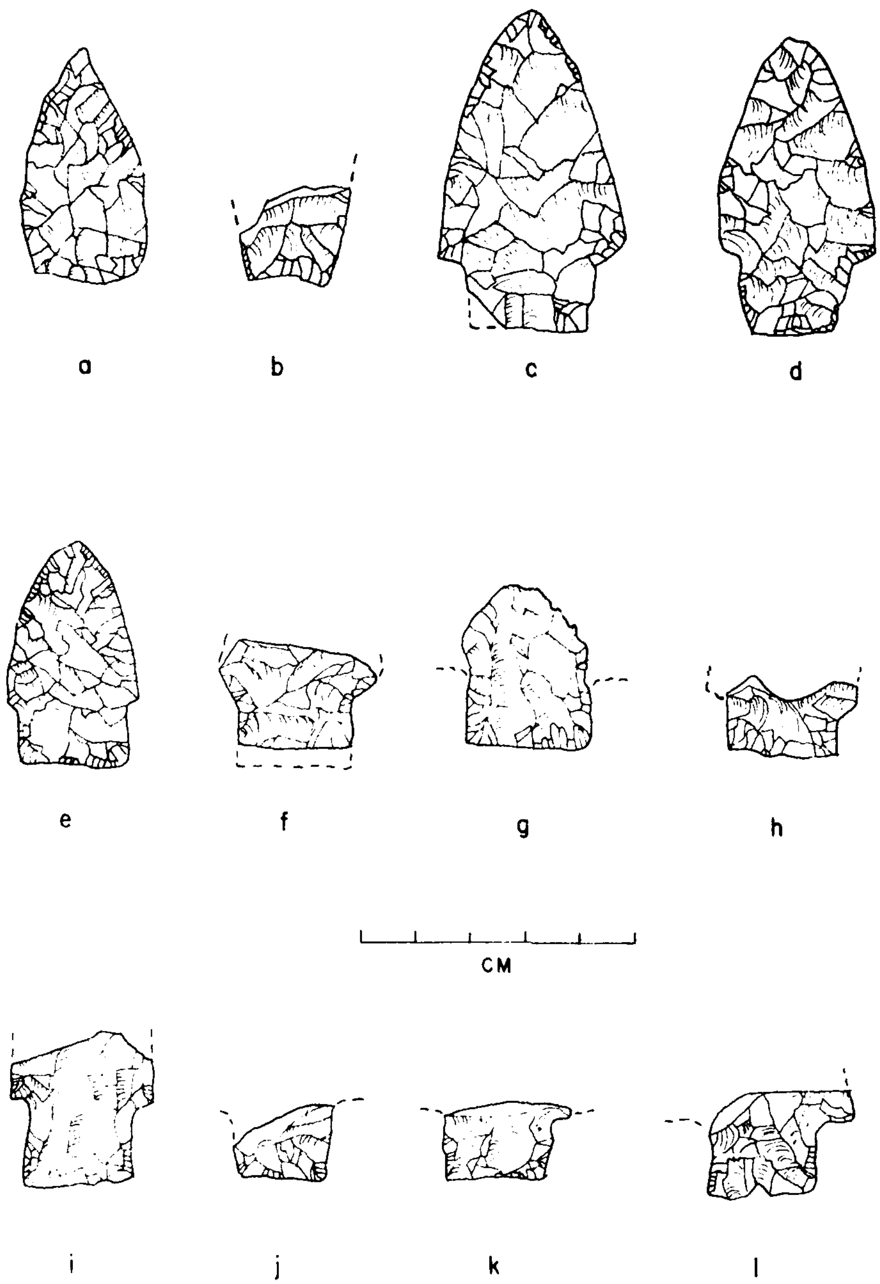


Figure 32. 23MC56 Artifacts. Projectile Points. (a) Group 18, (b) Group 17, (c-l) Group 9.

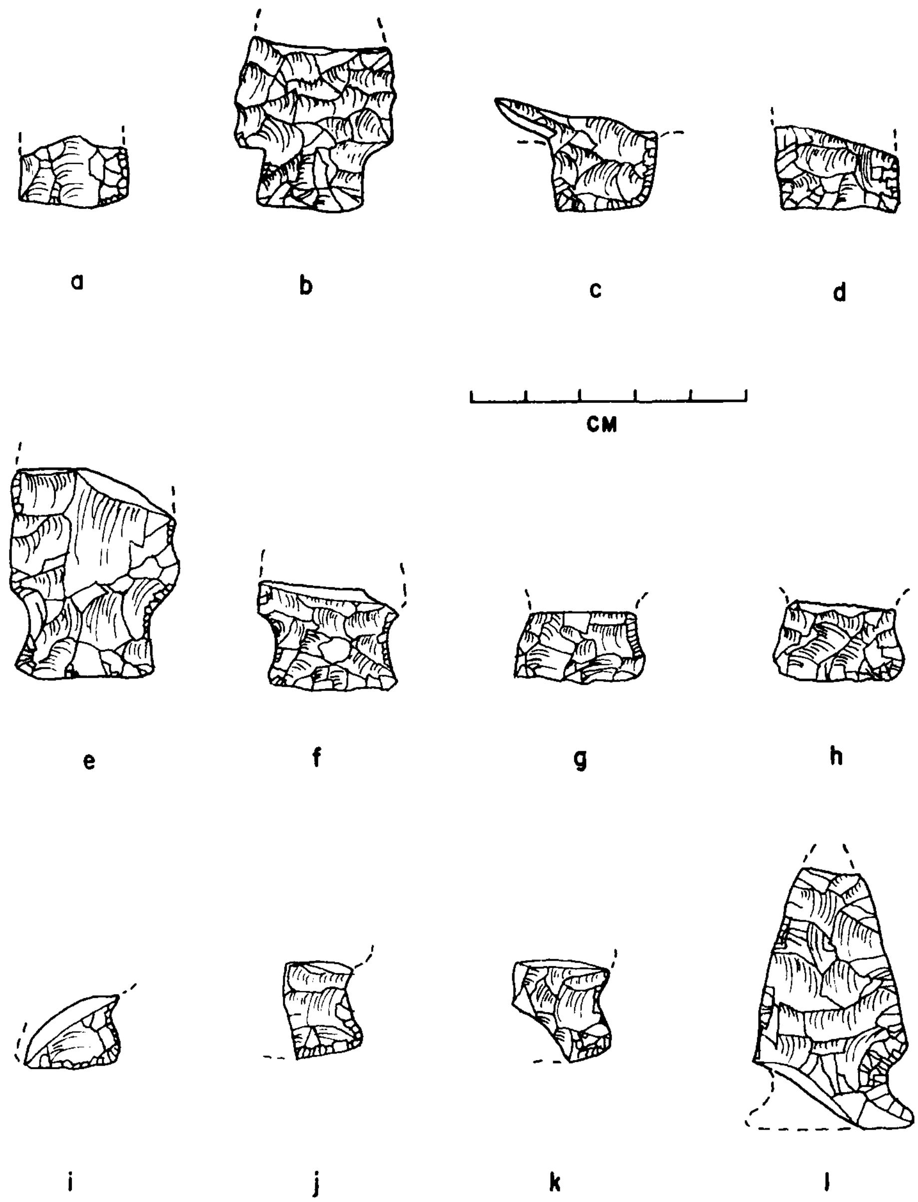


Figure 33. 23MC56 Artifacts. Projectile Points.
(a-d) Group 9, (e-k) Group 4, (l) Group 25.

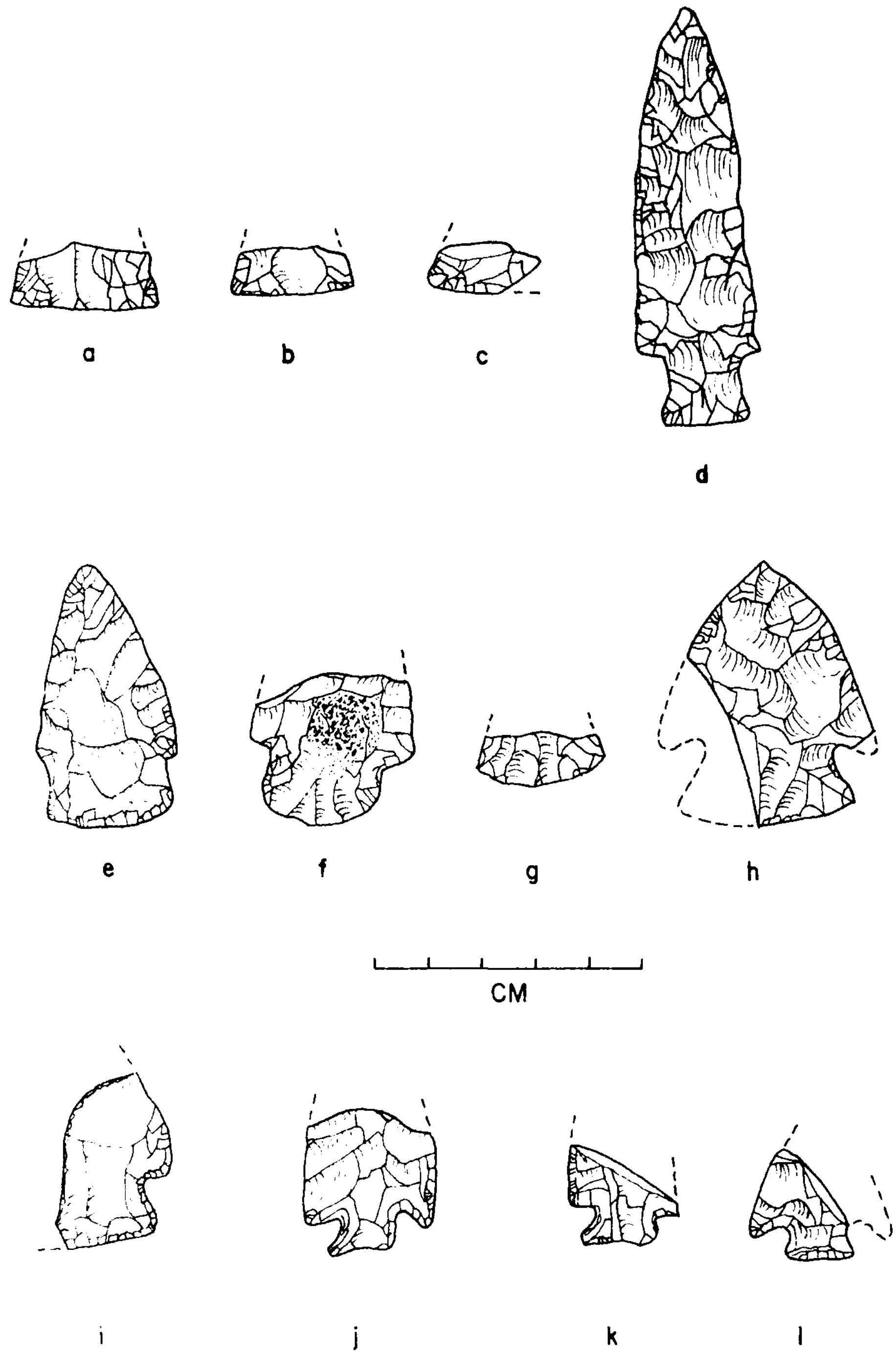


Figure 34. 23MC56 Artifacts. Projectile Points. (a-c) Group 25, (d) Group 5, (e-g) Group 26, (h-i) Group 28, (j) Group 33, (k-l) Group 34.

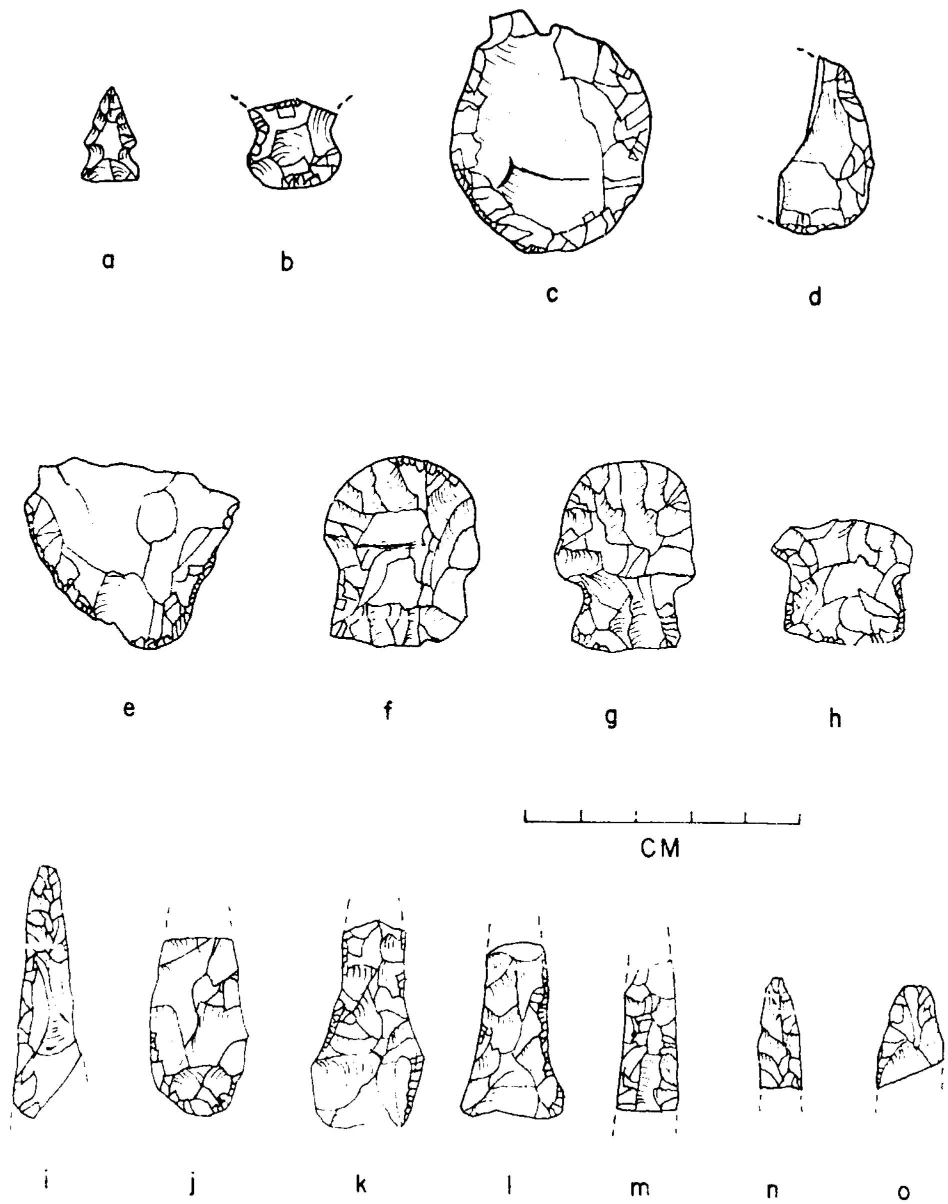


Figure 35. 23MC56 Artifacts. (a) Group 37, (b) Group 45, (c-e) Group 51, (f-h) Group 52, (i-o) Group 54.

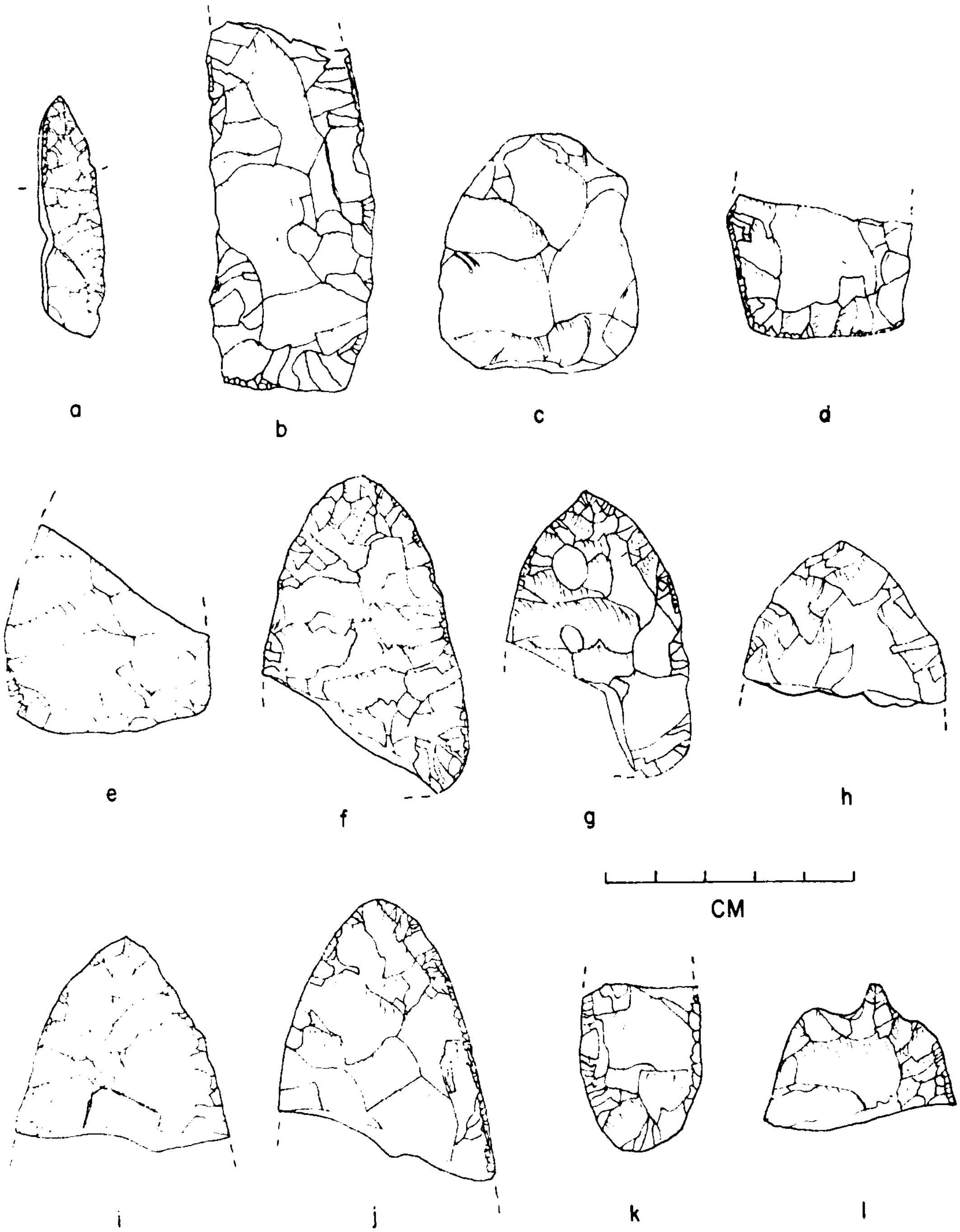


Figure 36. 23MC56 Artifacts. Bifaces. (a) Group 55, (b) Group 59, (c) Group 60, (d) Group 67, (e) Group 68, (f-j) Group 72, (k) Group 70, (l) Group 57.

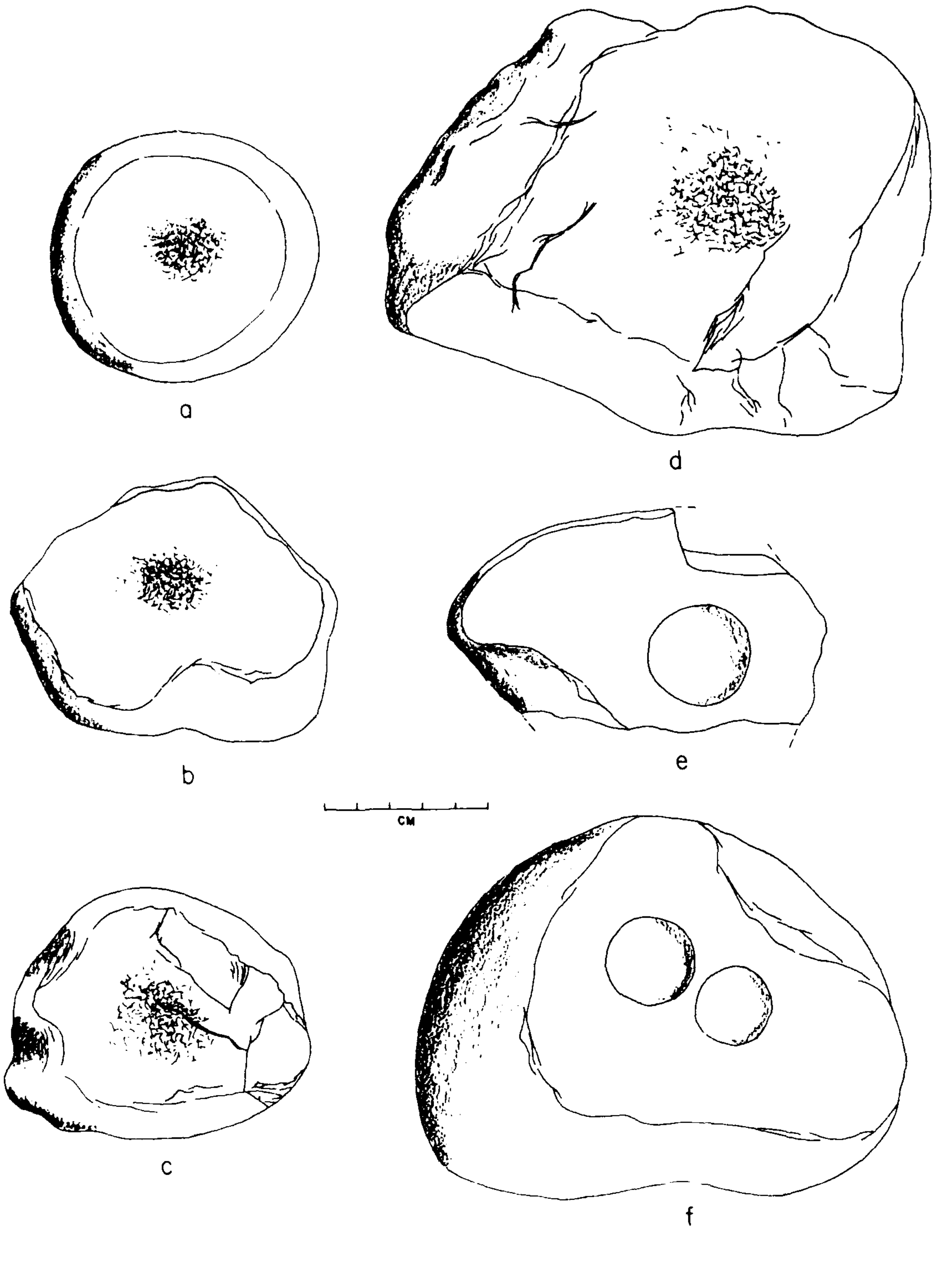


Figure 37. 23MC56 Artifacts. Pecked Stone. (a-f) Group 90.

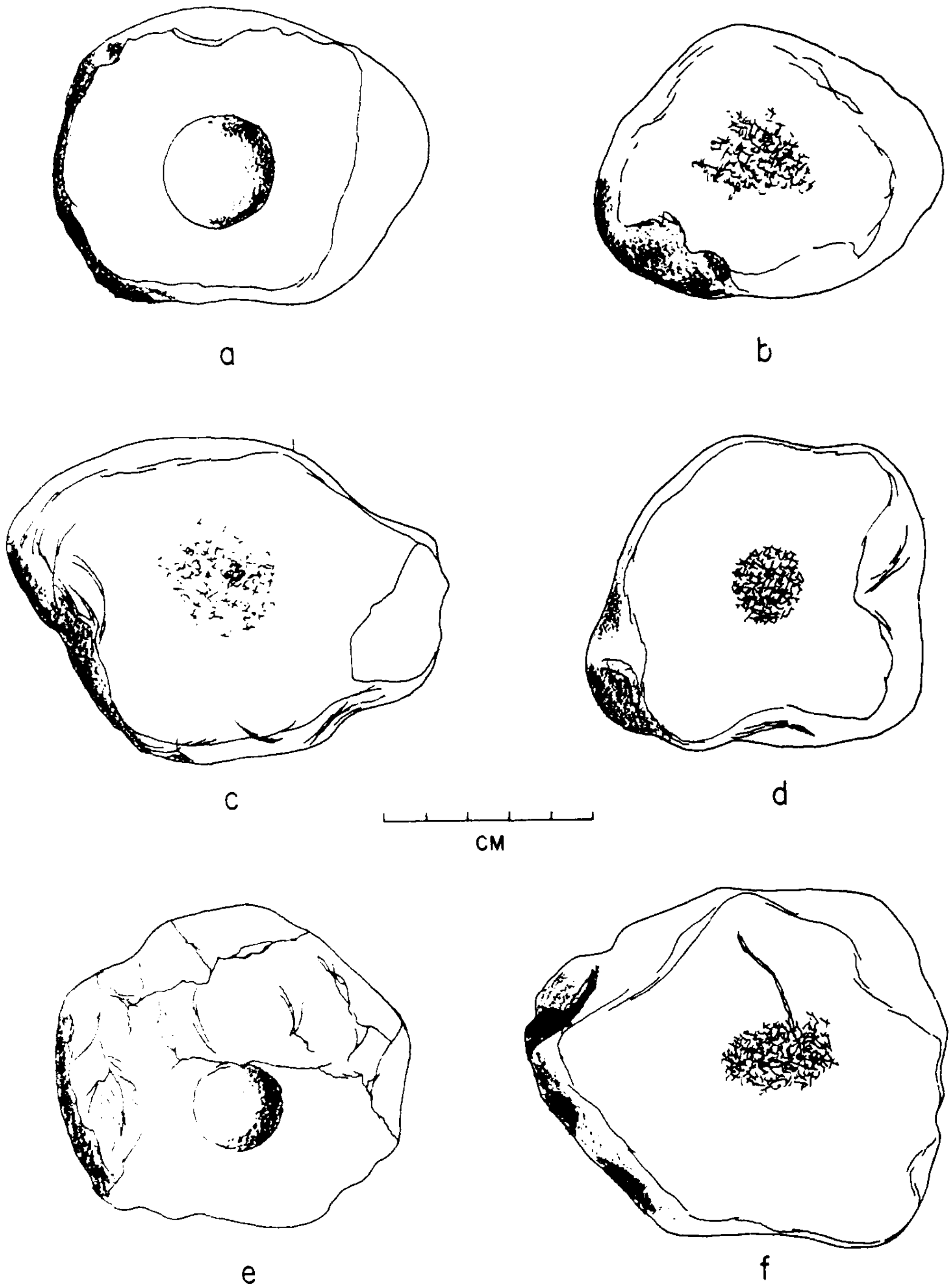


Figure 38. 23MC56 Artifacts. Pecked Stone. (a-f) Group 90.

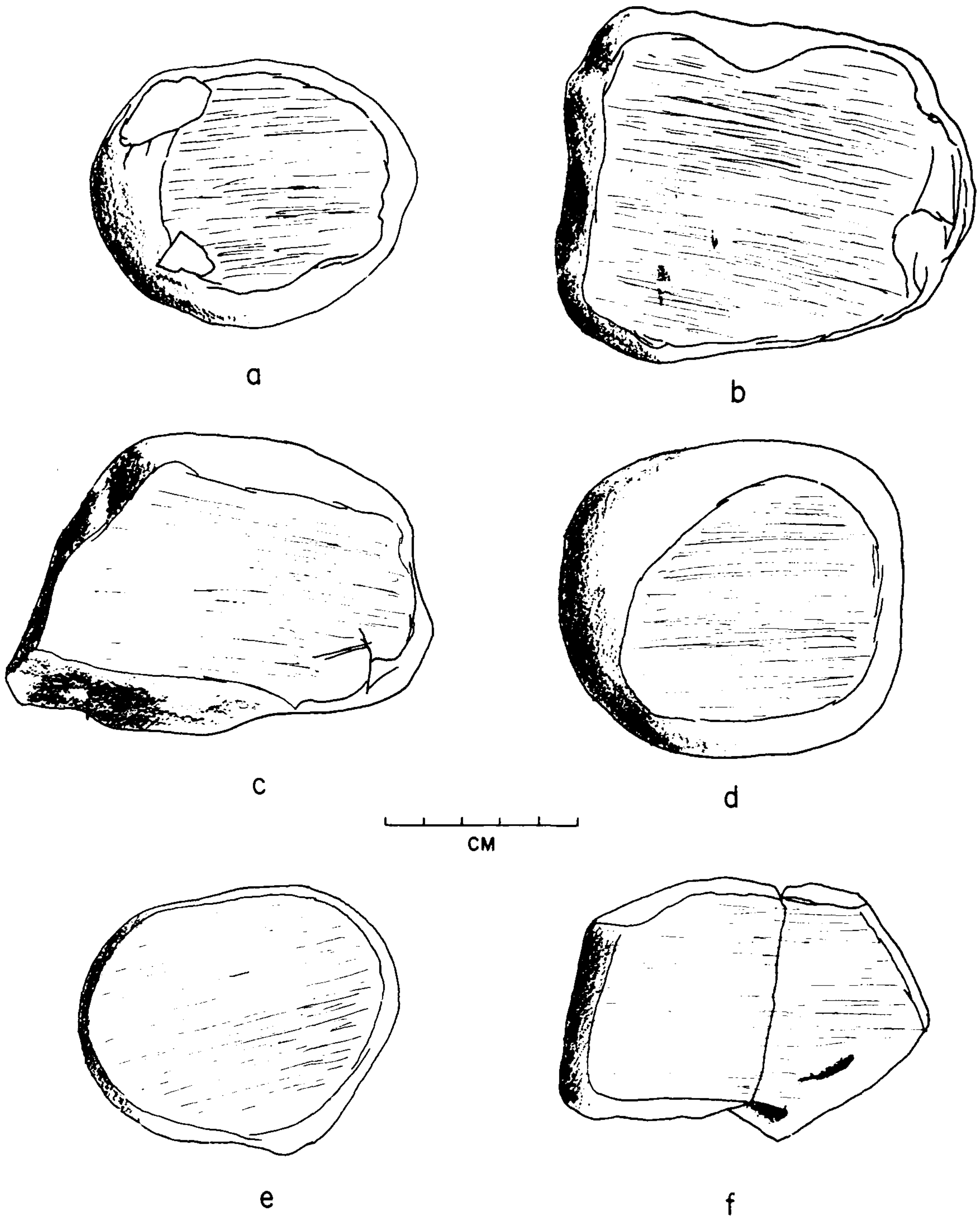


Figure 39. 23MC56 Artifacts. Ground Stone. (a-f) Group 91.

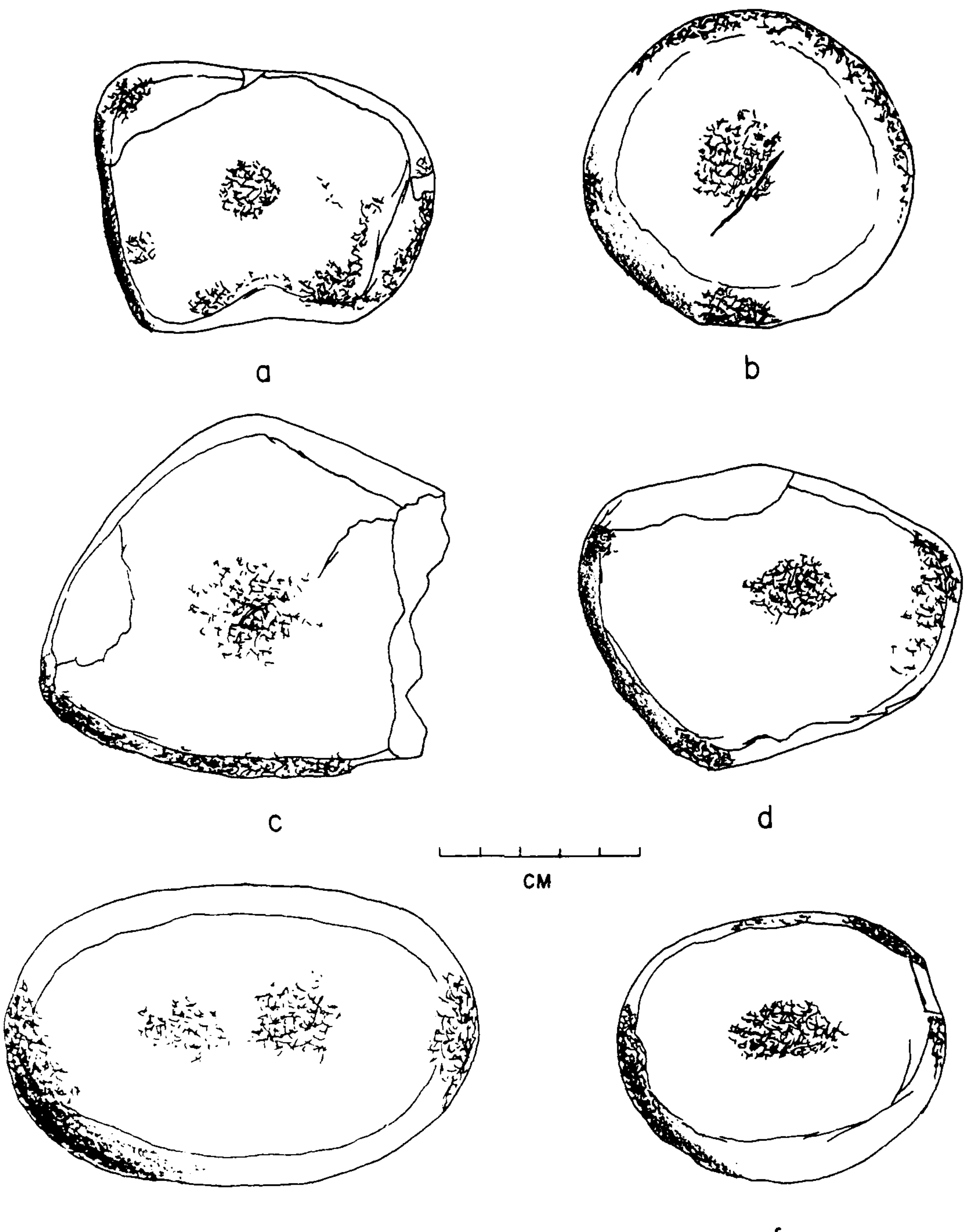


Figure 40. 23MC56. Artifacts. Pecked and Battered Stone. (a-f) Group 94.

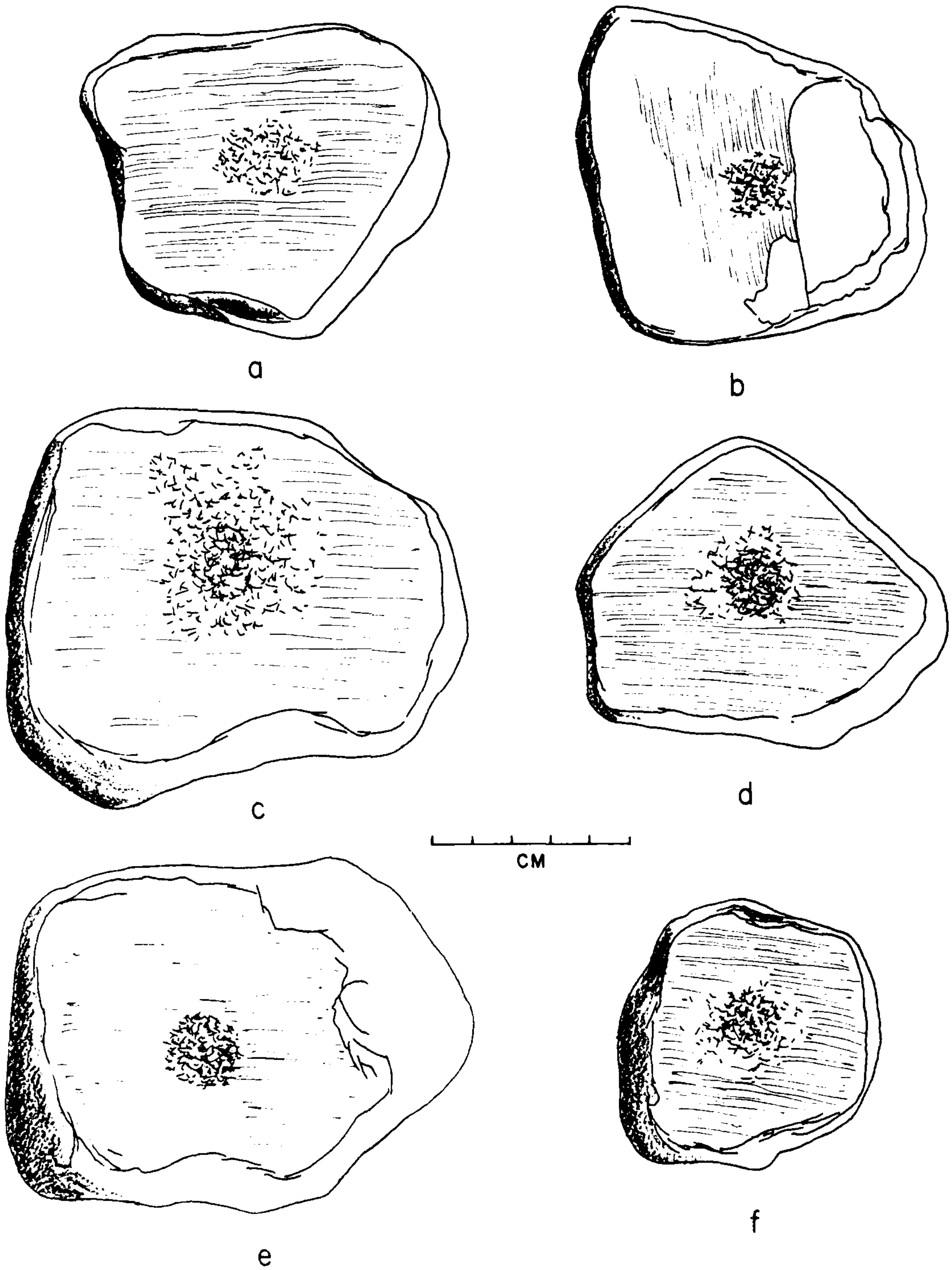


Figure 41. 23MC56. Artifacts. Ground and Pecked Stone. (a-f) Group 93.

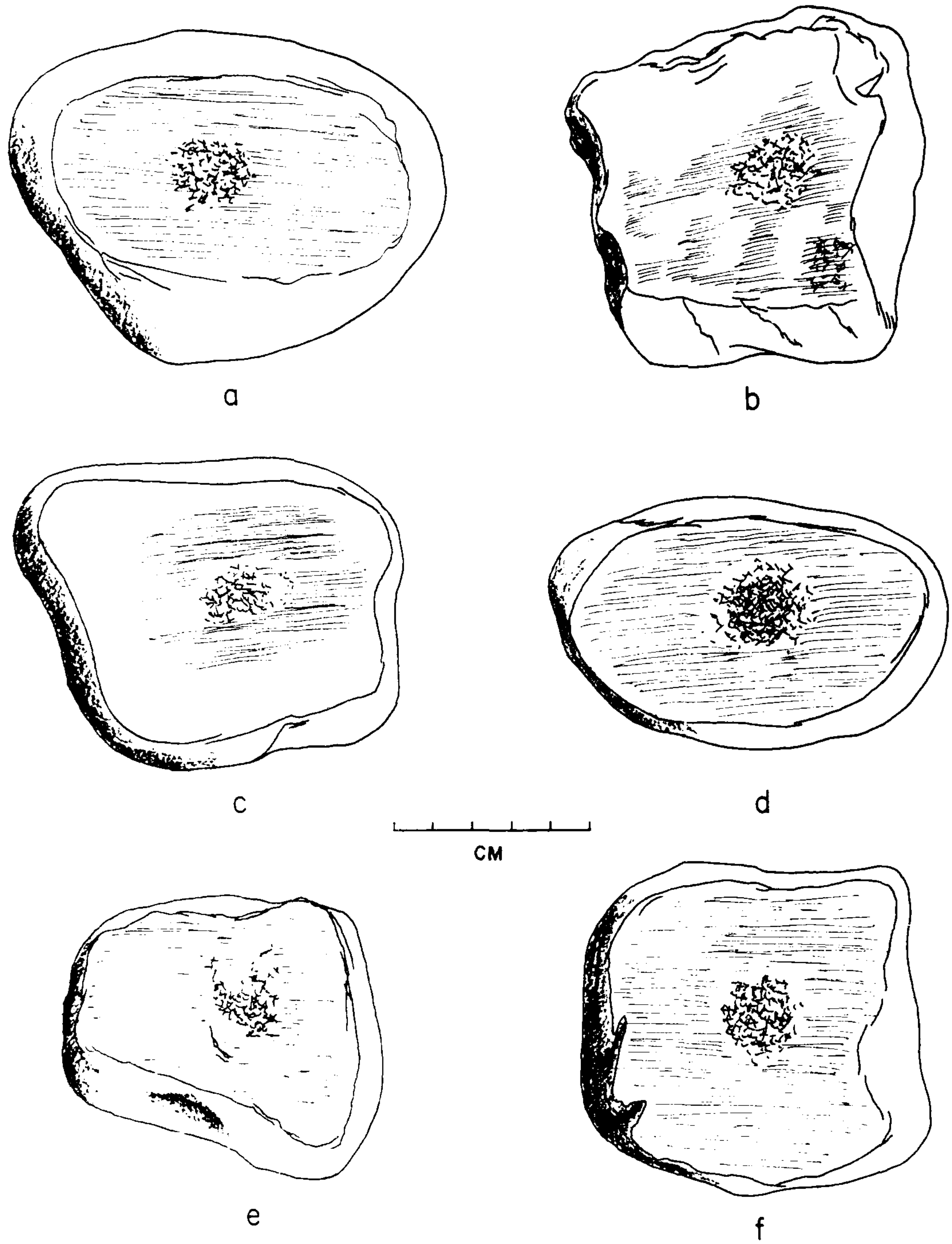


Figure 42. 23MC56 Artifacts. Ground and Pecked Stone.
(a-f) Group 93.

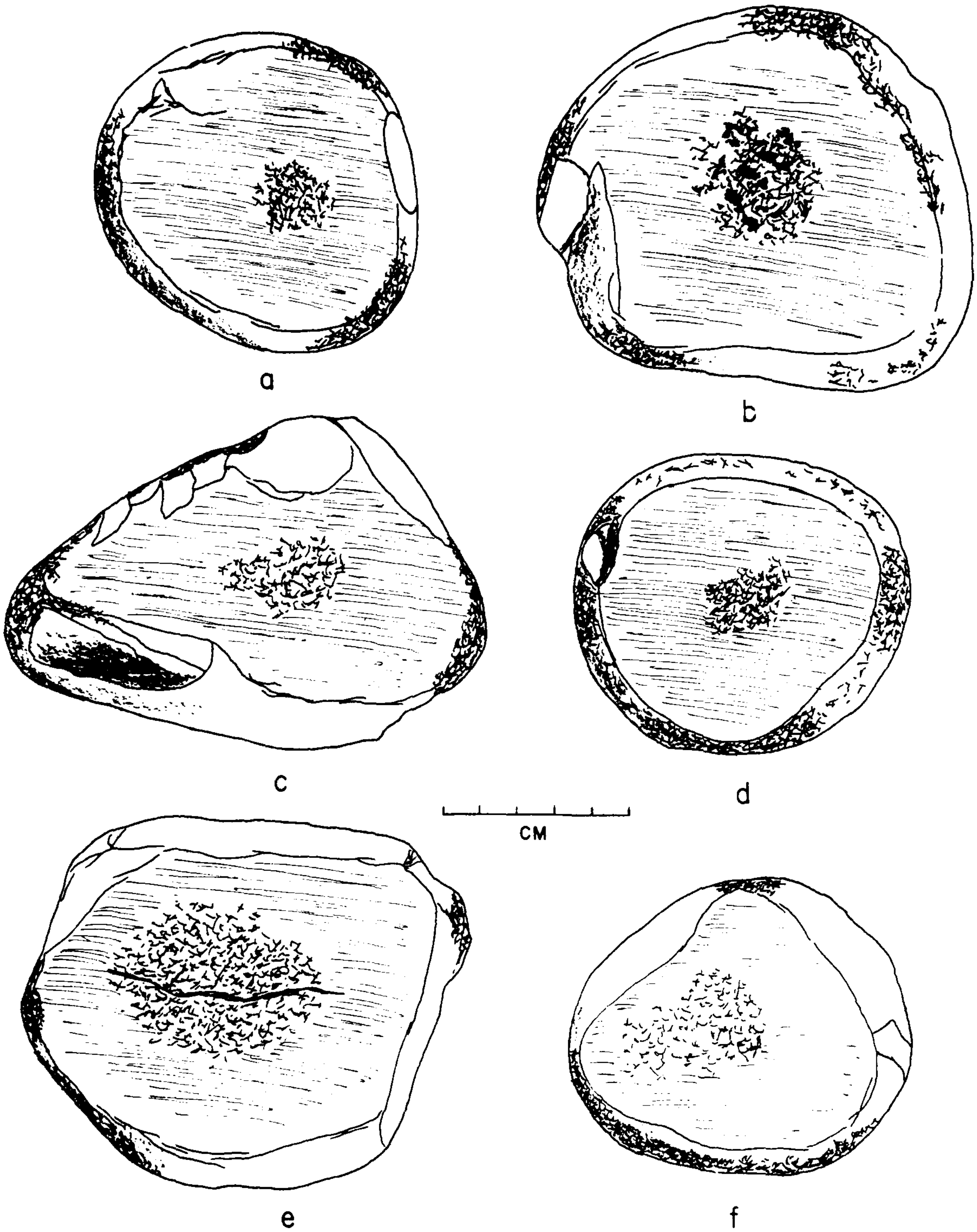


Figure 43. 23MC56. Artifacts. Ground, Pecked, and Battered Stone. (a-f) Group 96.

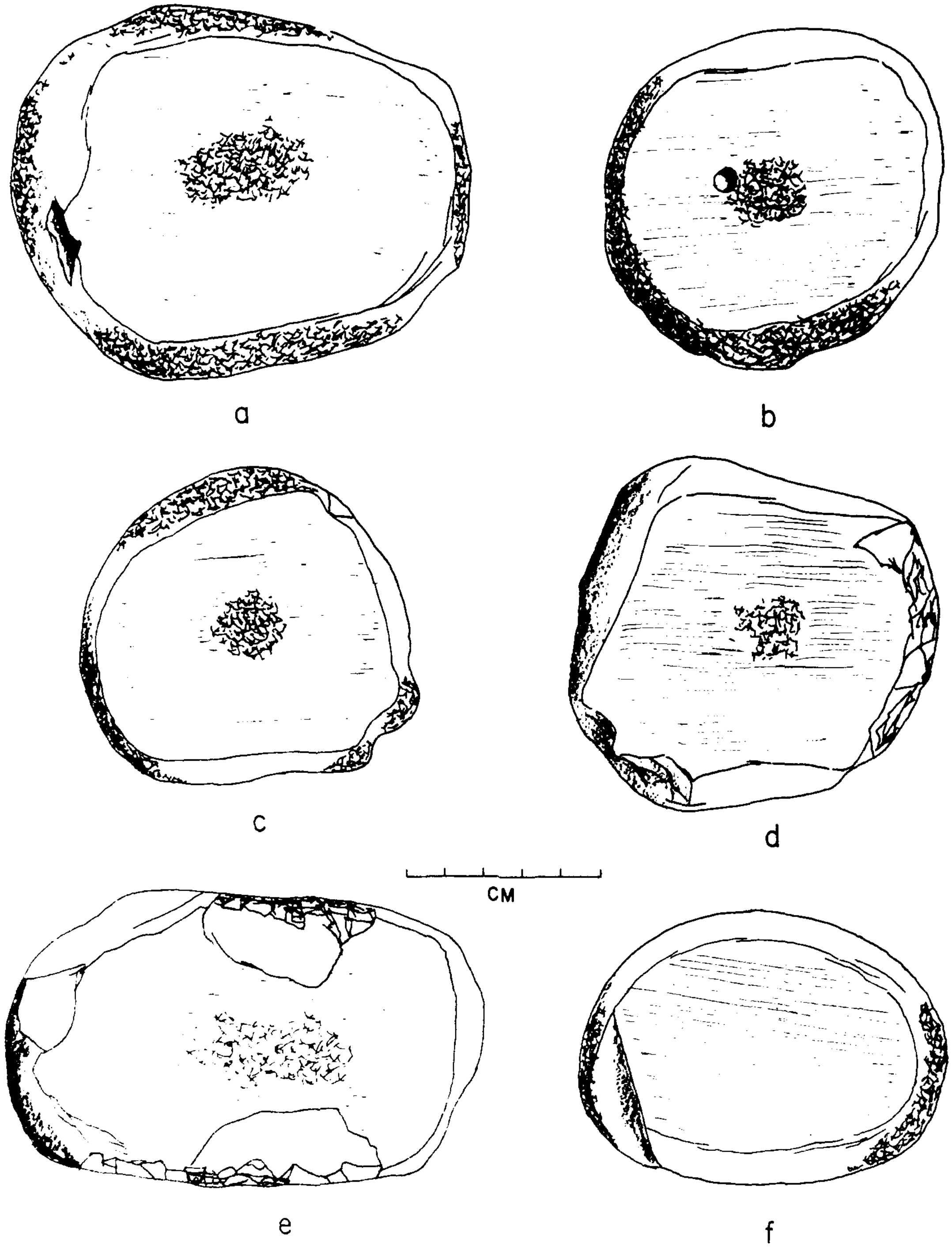


Figure 44. 23MC56. Artifacts. Ground, Pecked, and Battered Stone. (a-e) Group 96, (f) Group 95.

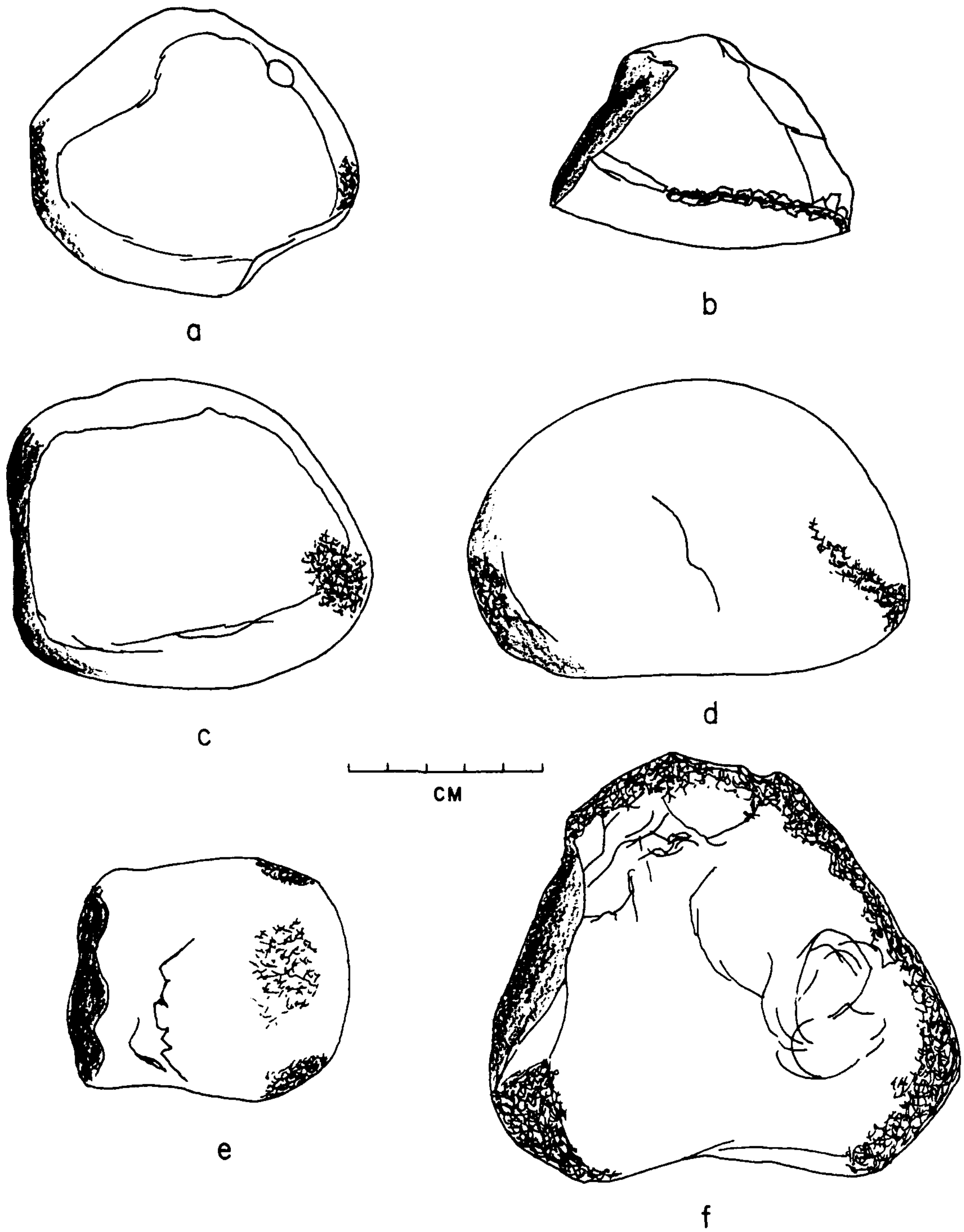


Figure 45. 23MC56. Artifacts. Battered Stone. (a-f) Group 92.

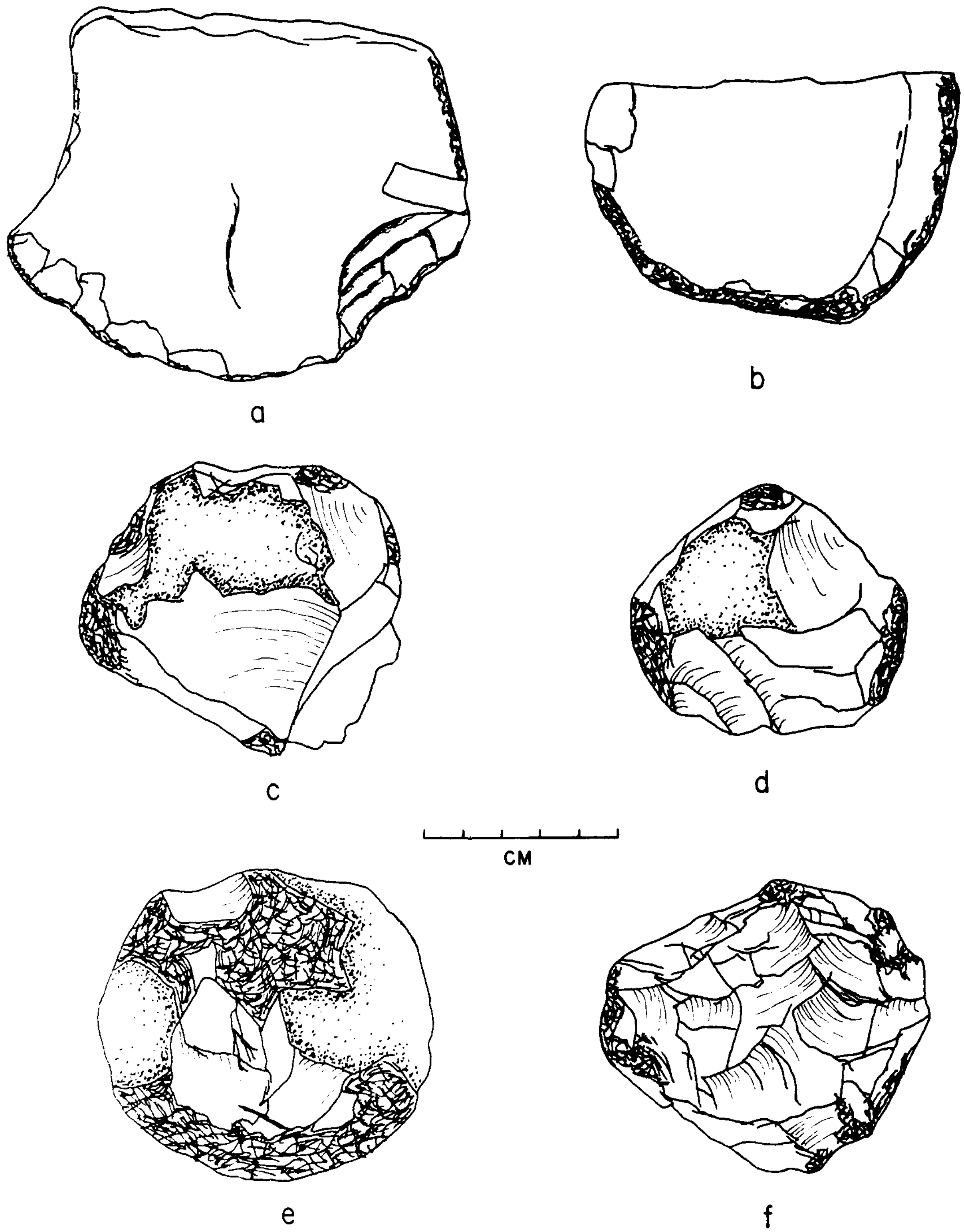
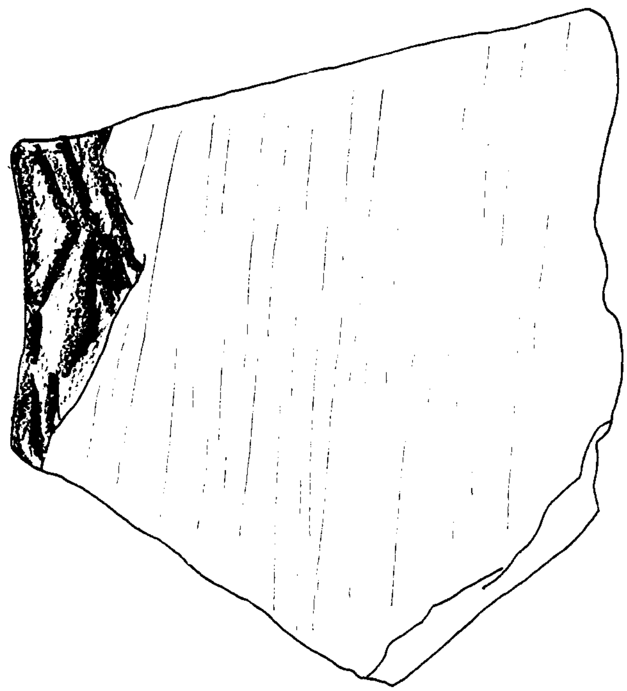
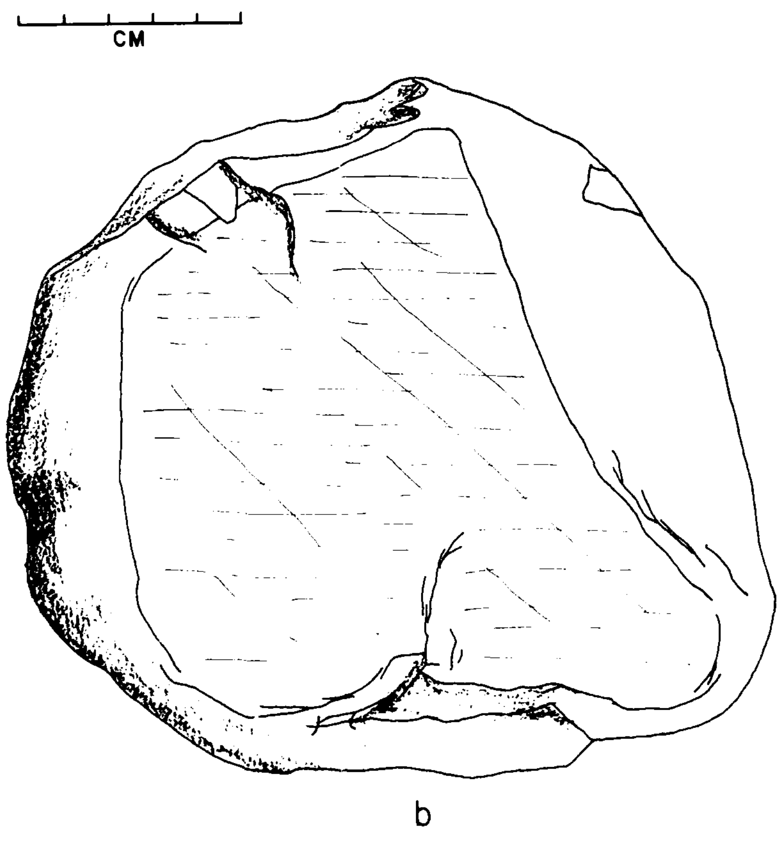


Figure 46. 23MC56. Artifacts. Battered Stone and Chert Hammerstones. (a-b) Group 92, (c-f) Group 97.



a



b

Figure 47. 23MC56. Artifacts. Metates. (a-b) Group 107.

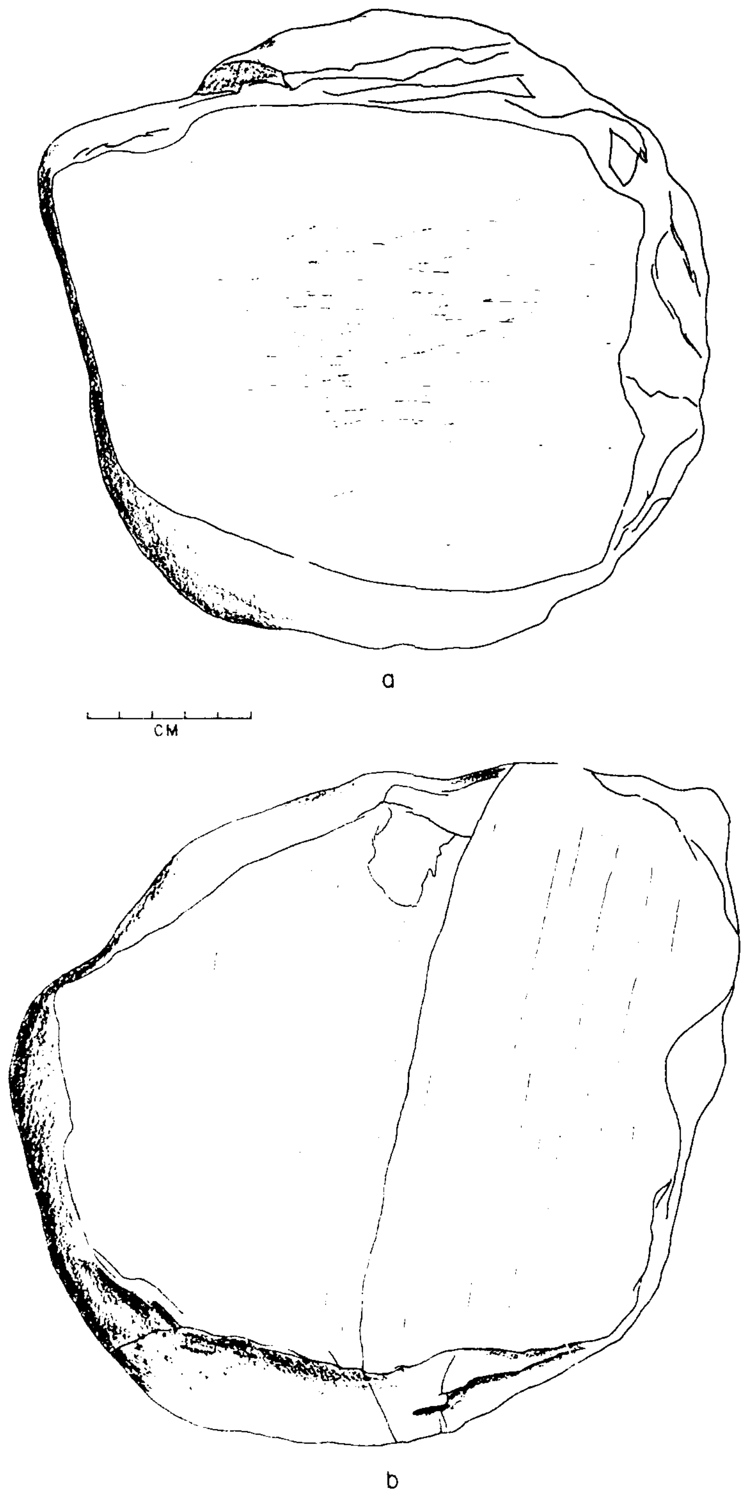


Figure 48. 23MC56 Artifacts. Metates. (a-b) Group 107.

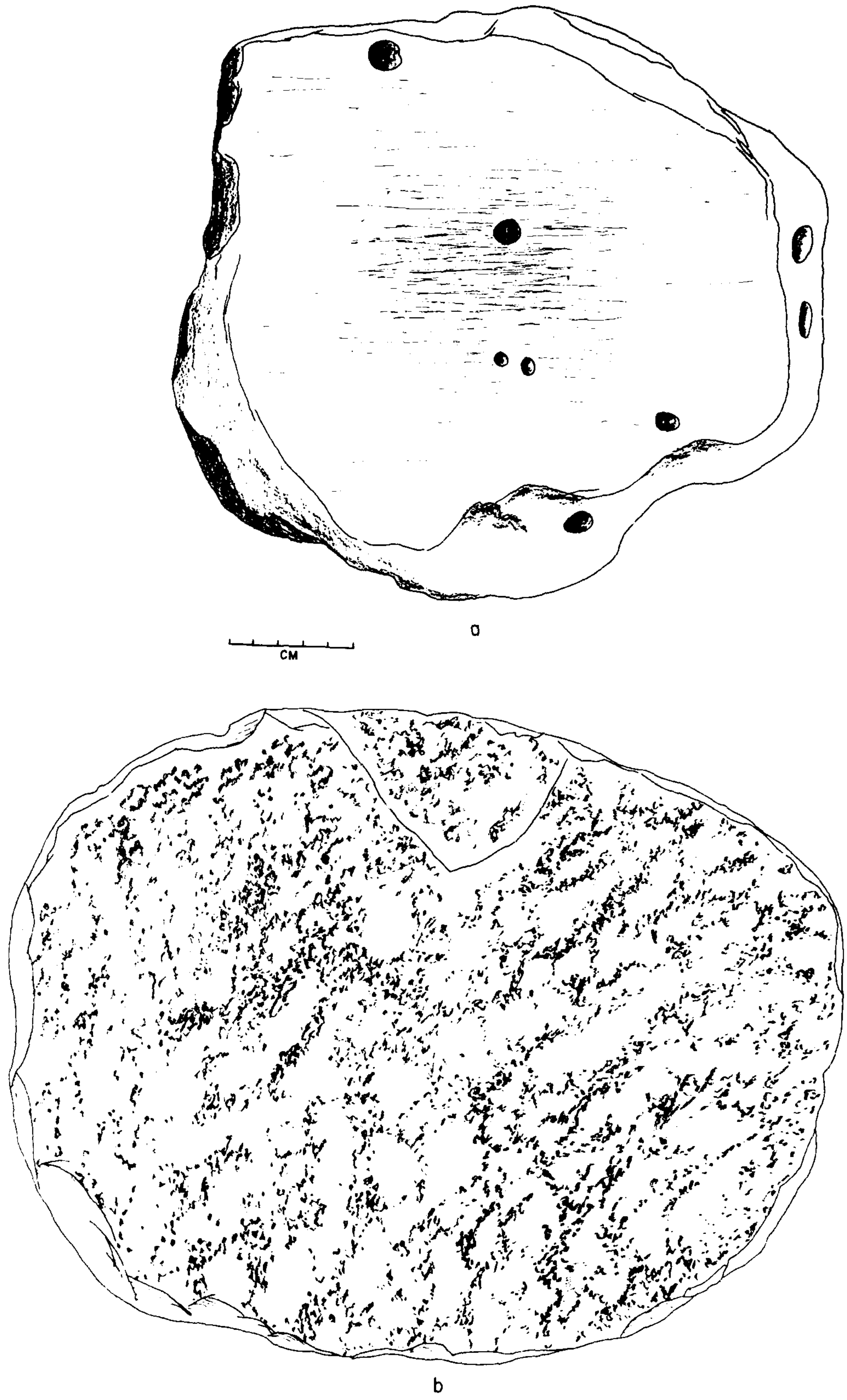


Figure 49. 23MC56 Artifacts. Metates. (a) Group 107, (b) Group 108.

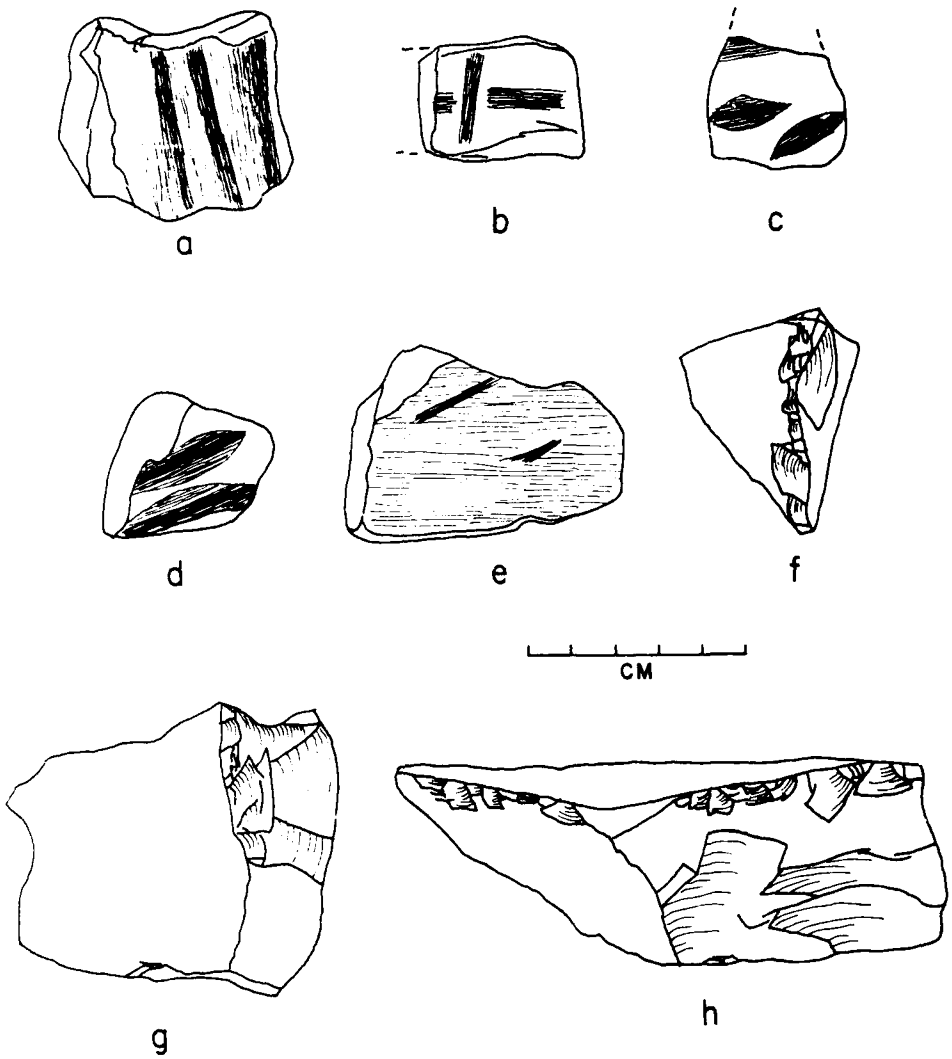


Figure 50. 23MC56 Artifacts. Abraded Sandstone and Chipped Argillite. (a-d) Group 102, (e) Group 103, (h) Group 104.

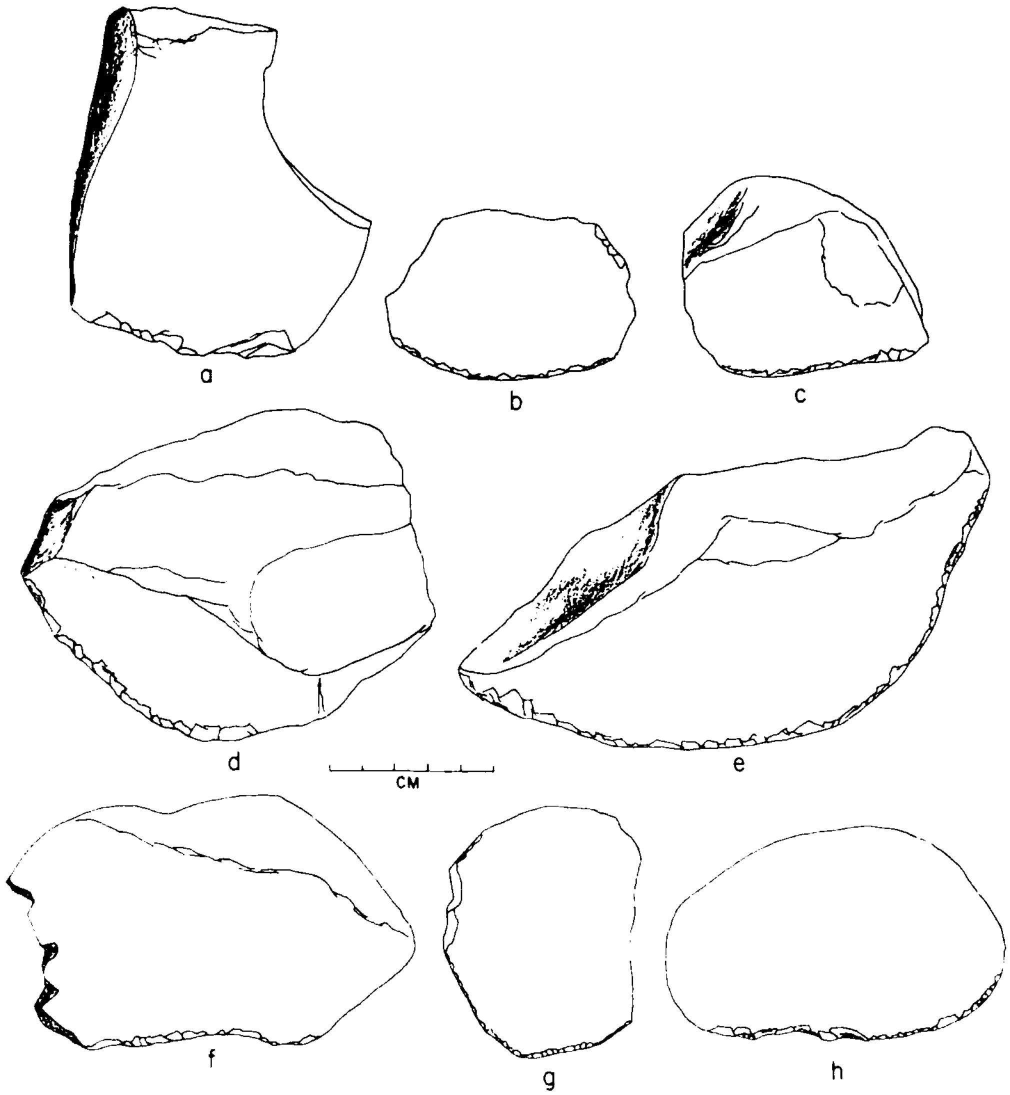


Figure 51. 23MC56 Artifacts. Utilized Fire-cracked Rock. (a-h) Group 110.

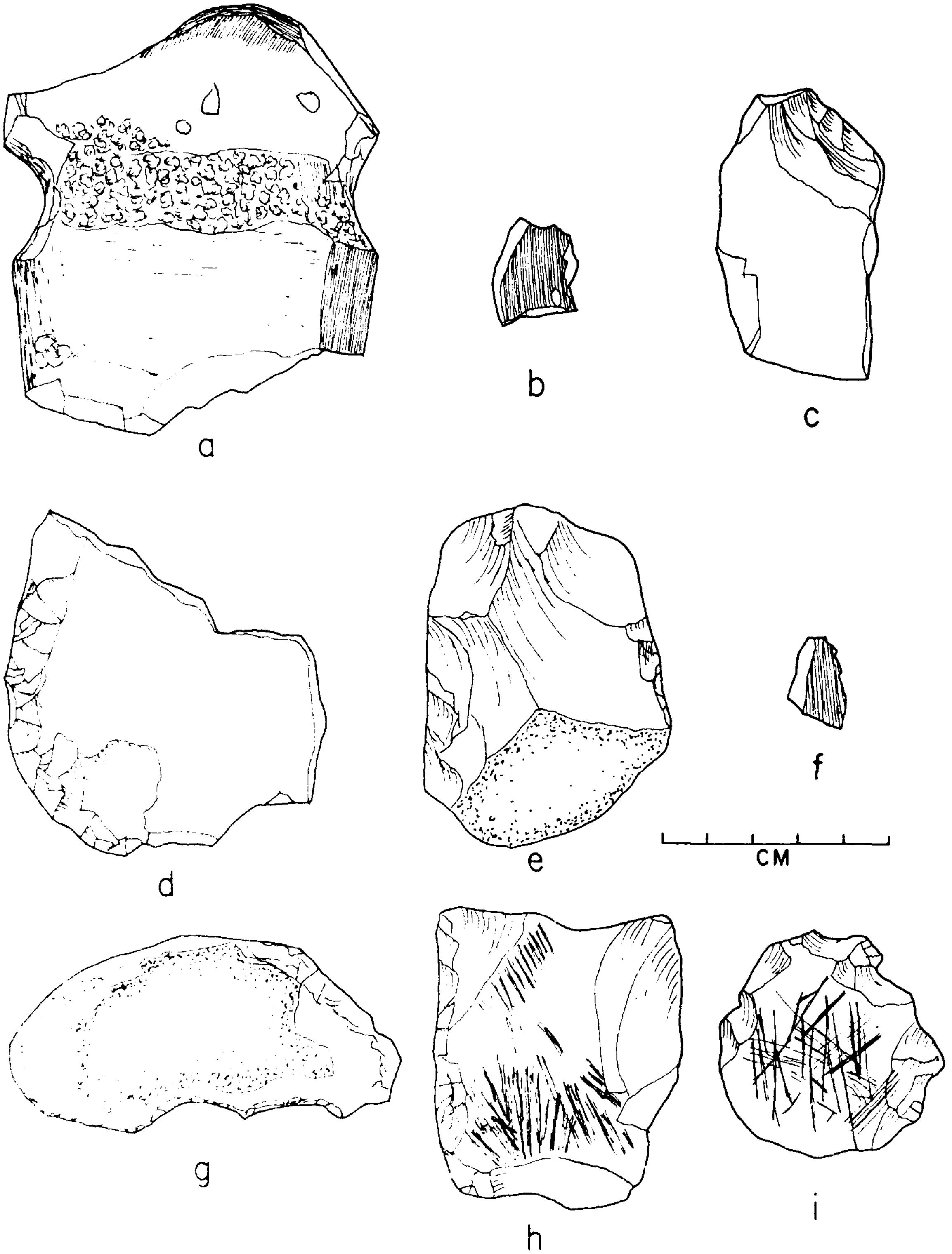


Figure 52. 23MC56 Artifacts. Hematite. (a) Group 115 (b) Group 118, (c-e) Group 117, (f) Group 121, (g) Group 122, (h-j) Group 124.

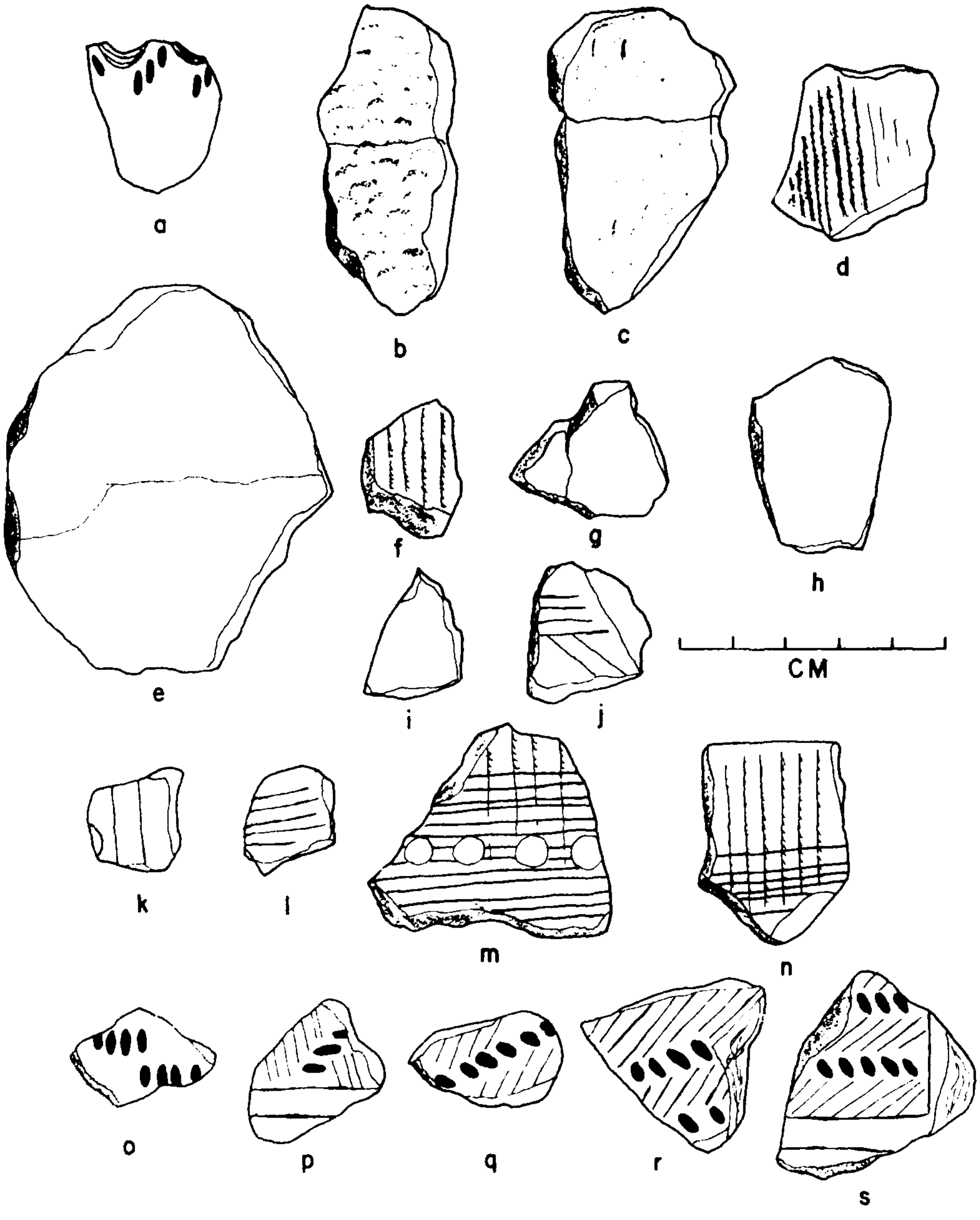


Figure 53. 23MC56 Artifacts. Pottery. (a-c) Group 126, (d-f) Group 127, (g-i) Group 128, (j-l) Group 120, (m) Group 131, (n-s) Group 132.

This site lies on a large hill isolated by meander loops of the river to the north and south. The site is on the left (east) bank of the East Fork. The hill lies approximately 200 feet south of the Axtel road relocation. The elevation of the site is from 790-805 ft. m.s.l. The site area is estimated to be approximatley 450 feet east-west by 250 feet north-south. The river flowed along the western edge of the site until diverted by the Axtel road relocation. Hill slopes are steep on the western edge; moderate to steep on the north and south. The eastern portion of the site had been cultivated for a number of years. The western portion of the site had not been plowed, and material was in a good state of preservation. Visibility was poor at the time of the initial survey. Clearning had removed trees along the western edge of the hill, and surface material was collected from this area.

Although additional excavations on the site were desirable, the site will not be completely destroyed. A portion of the site will be above water at multipurpose pool but will be inundated during periods of high water. An additional test in the largely undisturbed area west of the fence (Figure 54) was considered necessary. The site appears to have been occupied during the Middle and Late Woodland periods. The Woodland tradition in northern Missouri is not as yet well understood. Other sites with Woodland components are present in the area, and it was decided that large block excavations on the site should not be conducted at this time.

Two, one and one-half meter squares were laid out for excavation in the area west of the fence (Figure 54). The squares were excavated in ten centimeter arbitrary levels to a depth which was culturally sterile. A total of three, ten centimeter levels were dug in the squares to a total depth of thirty centimeters below the surface.

The only physical stratigraphy noted was the result of soil horizonation. An A-horizon extend to a depth of 7.5 centimeters below the surface. A B1-horizon extended below that point to a depth of approximately 22 centimeters below the surface. The boundary between the B1- and B2- horizons was not as sharp as that noted on other sites, and the above depth is a mean depth. A B2-horizon extended to an undetermined depth below that point.

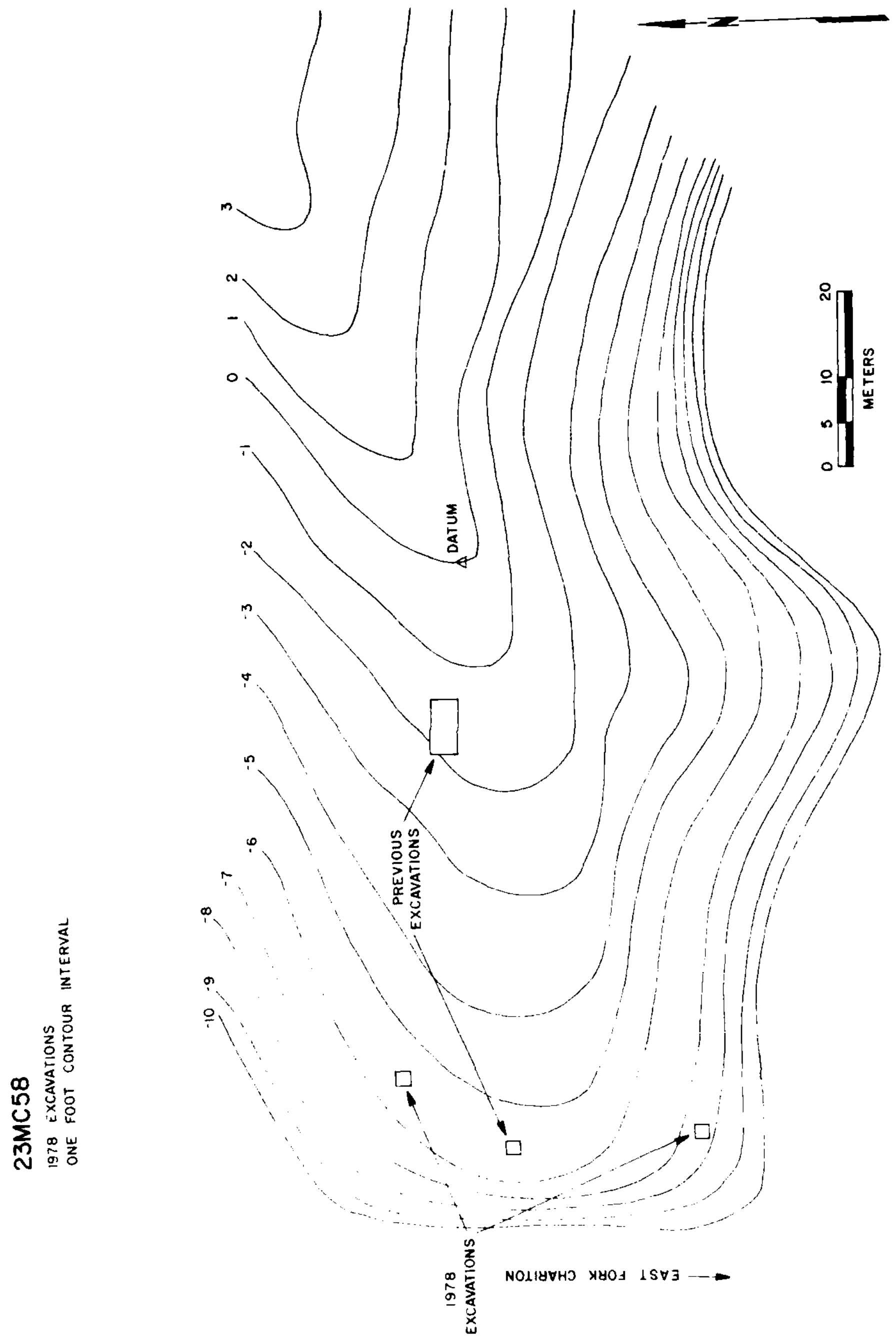


Figure 54. 23MC58. Site Map and Location of Excavations.

Description of Materials

Points

Group 2:a Contracting-stemmed Point - 1 (Figure 55, a)

The specimen in this category exhibits a rounded base, contracting stem, abrupt shoulders, straight blade margins, and a bi-convex cross-section. The chipping pattern consists of secondary percussion and pressure flaking, as well as tertiary percussion and pressure flaking. Primary flaking, if present, has been completely obscured by subsequent flaking. Secondary flake scars are small to medium, generally expanding, uneven in size, and inconsistent in distribution. Tertiary flake scars are small, lamellar to expanding, uneven in size, and inconsistent in distribution. Blank material is difficult to determine but appears to have passed through a preform stage. The pattern of flaking on the base does not match that on the rest of the specimen. Flaking on the base is larger and appears to be by percussion.

Group 34:a Medium, Straight-based, Corner-notched Point - 1 proximal fragment (Figure 55, b)

The specimen exhibits a straight base, sharp stem-base juncture, expanding stem, oblique shoulders, straight blade margins, and a bi-convex cross-section. The chipping pattern consists of secondary pressure flaking only. Flake scars are small, generally lamellar, uneven in size, and inconsistent in distribuiton. Notches are deep and were created by the removal of multiple pressure flakes. Final notch flakes originate from the same face. Blank material appears to have consisted of a chert flake. The specimen exhibits a transverse stress fracture.

Group 47:a Distal Projectile Point Fragment - 1

The specimen appears to have been worked by percussion and by pressure. Primary flake scars are medium in size, expanding, fairly even in size, and inconsistent in distribution. The specimen exhibits fire blackening and some heat spalling. It exhibits a transverse stress fracture.

Group 48:a Medial Projectile Point Segment - 1

The specimen consists of a medial portion of the blade of a projectile point. The specimen exhibits a transverse stress fracture across the notches, and a transverse stress fracture across the blade. The fracture across the notches was utilized after fracture. The specimen exhibits straight lateral margins and slightly oblique shoulders.

Drill-like Implement

Group 54:a Narrow Drill-like Implement - 1 distal fragment (Figure 55, c)

This specimen has a narrow bit with almost parallel sides. The specimen exhibits a slightly convex distal end. The chipping pattern is indicative of at least secondary pressure flaking. There is little or no wear anywhere on the remaining portion. The specimen exhibits a transverse stress fracture.

Bifaces and Biface Fragments

Group 75:a-e Thin Biface Fragments - 5

These specimens are broken in such a way as to preclude their inclusion in any other category. Three specimens exhibit careful edge trimming to produce a straight edge. Two specimens exhibit primary flaking only and still retain a sinuous edge. They vary considerably in chipping pattern and fracture pattern.

Cores

Group 77:a-b Polyhedral Chert Cores - 2

These specimens exhibit flakes struck from the nodule in multiple directions. Cortex is still present on both specimens. The quality of material is relatively poor. Both specimens contain numerous fracture planes.

Group 80:a-c Chert Nuclei - 3

These specimens are chert nodules which have had numerous flakes removed and are virtually exhausted. All appear to have been irregular cores. One specimen still retains cortex on multiple edges.

Miscellaneous Worked Chert

Group 83:a-b Miscellaneous Worked Chert - 2

These specimens have been worked unifacially or bifacially but lack any discernible pattern in flaking.

Specimens are irregular, and one specimen still retains cortex. Flaking is rough and largely by percussion.

Flake Tools

Group 86:a-e Utilized Flakes - 5

The specimens in this category are flakes which exhibit modification of the flake margins through utilization. Specimen 86:a exhibits light use. It exhibits wear along both lateral margins, and both ends are fractured. Specimen 86:b is a piece of utilized shatter, roughly triangular in cross-section. All three edges have been utilized. Specimens 86:c and 86:d are flake fragments with heavy edge wear. Utilization appears on the single remaining edge. Utilization appears to have occurred after breakage. Specimen 86:e is a large flake which exhibits utilization on both lateral margins and the distal end. Utilization appears to be unifacial on all specimens except for one flake margin on specimen 86:e.

Ground and/or Pecked Stone

Group 90:a-c Pecked or Pitted Stone - 3
(Figure 5, d-e, Figure 56, a)

These specimens exhibit one or more pecked faces. Two specimens exhibit pecking on both faces. The third specimen is fire-cracked in such a way that it is impossible to determine if more than one face was pecked. The degree of force on all specimens appears to have been light. Pecking on all specimens is centered on the face but an actual pit has not created.

Group 91:a Ground Stone - 1 (Figure 56, b)

This specimen exhibits grinding on both faces. The specimen is too fragmentary to determine if grinding was the sole modification. The specimen exhibits cortex removal on both faces and smoothing. It lacks observable striations or polish. The specimen is fire-cracked.

Group 92:a-d End and Edge Battered Cobbles - 4
(Figure 56, c-f)

These specimens exhibit battered areas on the ends and edges of the cobbles. Specimens are diverse in size and degree of battering. Specimen 92:a has heavy battering on both of the ends. The degree of force was heavy and resulted in heavy edge crushing. Battering covers the ends but does not extend up onto the edges or faces. Specimen 92:b has battering on one edge. The degree of force was not heavy, and wear is characterized by moderate edge crushing. Battering is confined to the highest point on the edge. Edge crushing does not extend onto the face or up the edge. Specimen 92:c is small and exhibits light battering on one end. Degree of force was light and edge crushing is slight. Specimen 92:d is fire-cracked and exhibits battering on the remaining end. The degree of force was moderate and resulted in moderate edge crushing with slight edge shattering. Battering is confined to the end and does not extend up the edges or onto the face.

Ceramics

Group 126:a Pottery - 1

Sample: 1 highly eroded body sherd

Paste:

Temper: Highly rounded, sand-sized particles, mainly quartz but with some plagioclase. Particles are very small (.1 to 1 mm).

Texture: Paste is fairly compact. Sherds exhibit slight lamination. Lamination is roughly parallel to the interior-exterior surfaces. Breaks are irregular.

Color: The exterior surface is reddish brown (2.5YR5/4). Interior color is black (5YR2/1).

Method of Manufacture: It appears that the vessel was lump modeled, as there are not straight breaks indicative of coiling.

Surface Finish: The exterior is smooth.

Decoration: Undetermined.

Form: Undetermined.

Lithic Waste

Group 134: Chert Waste - 191

A total of 82 chert flakes and 9 pieces of chert shatter were recovered from the excavations. 93 chert flakes and 7 pieces of chert shatter were recovered from the surface.

Group 136: Quartz Waste - 2

Two pieces of quartz shatter or flakes were recovered from the surface.

Group 141: Fire-cracked Rock - 264

A total of 163 pieces of fire-cracked rock were recovered in the excavations and 101 pieces of fire-cracked rock were recovered from the surface.

Group 142: Unmodified Stone - 181

The material included in this category lacks any evidence of intentional or unintentional cultural modification. Although some of the material recovered is probably the result of accidental inclusion resulting from the collection of materials from the river, their number would appear to be too high to be the result of that alone.

TABLE 19

Artifact Measurements and Attributes - 23MC58

	Cat. No.	Length	Width	Thickness	Weight (gm)	Remarks
Projectile Points						
Contracting-stemmed Point						
2:a	Sur.	42	23	8	7g	
Medium, Straight-based Corner-notched Point						
34:a	Sur.	23*	27*	6	7g*	proximal fragment
Drill-like Implement						
Narrow Drill-like Implement						
54:a	Sur.	12*	11*	6*	1g*	distal fragment
Cores						
Polyhedral Chert Cores						
77:a	Sur.	91	68	44	288g	
77:b	Sur.	75	37	31	89g	
Nuclei						
80:a	Sur.	50	32	20	28g	
80:b	Sur.	35	32	25	28g	
80:c	Sur.	33	20	18	18g	
Flake Tools						
Utilized Flakes						
86:a	3004	22	19	11	2g	2 lateral margins, light
86:b	Sur.	33	23	19	9g	2 edges, 1 end, light
86:c	Sur.	19	17	3	1g	1 edge, heavy
86:d	Sur.	16	12	3	1g	1 edge, heavy
86:e	Sur.	65	35	11	19g	2 edges, 1 end, moderate
Ground and/or Pecked Stone						
Pecked or Pitted Stone						
90:a	Sur.	82	66*	37	263g*	2p, diorite
90:b	Sur.	81	68*	41*	394g*	2p, gabbro
90:c	Sur.	58*	53*	41*	156g*	1p?, diorite
Ground Stone						
91:a	Sur.	64*	30*	51*	122g*	2g, argillite
End and Edge Battered Cobbles						
92:a	Sur.	103	58	43	332g	2b, quartzite
92:b	Sur.	99	82	47	514g	1b, argillite
92:c	Sur.	74	37	27	103g	1b, quartzite
92:d	Sur.	67*	37*	36*	122g*	1b?, argillite

TABLE 20

DISTRIBUTIONAL SUMMARY - 23MC58

		2	34	47	48	54	75	77	80	83	86	90	91	92	126	134	136	141	142
Xu 3000	L.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	33	33
	L.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	36	28
	L.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	14	30
Xu 3003	L.1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	20	-	30	31
	L.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	-	41	36
	L.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	9	24
Surface		1	1	1	1	1	5	2	3	2	4	3	1	4	1	100	2	101	-

The specimen in Group 2 is similar to specimens generally referred to as Gary. Gary points are found in a variety of contexts. Roper (1977:52-53) states that these are well known from Woodland contexts. Fly Catcher Village site in southwestern Missouri is dated at A.D. 715 ± 95 (Pangborn, Ward, and Wood 1966:21) although the date comes from a structure with no diagnostic material associated. Marshall (1972:25-60) notes Gary points from the Infinity site in southeastern Kansas. The dates A.D. 780 ± 80 and A.D. 970 ± 80 (Marshall 1972:93) were reported and were obtained from an area where a large number of Gary and Langtry points were recovered. Similar points were recovered from Graham Cave (Klippel 1971:24). They all appear in Zone II, which apparently has mixed contexts, and Logan (1952:19) notes that Woodland manifestations are restricted to this zone. Shippee (1967:33) notes a number of similar points from the Shields site and judged them to be part of an Early Woodland manifestation. They do appear in northeastern Missouri (Henning 1961:142). Suhm and Krieger (1954) estimates the chronological range to be from 2000 B.C. to A.D. 1600. Ahler (1971:15-16) describes somewhat similar points from Stratum 2 at Rodger's Shelter. Stratum 2 is bracketed by radiocarbon dates of 6300 ± 590 B.P. near the upper boundary and 7490 ± 170 B.P. to 8100 ± 140 B.P. near the lower boundary (Ahler 1971:6). The difficulty often encountered in separating Lantry, Hidden Valley, and Gary points makes their use in chronological applications questionable. Gary points may, however, be considerably more diagnostic of ceramic contexts but is not utilized without additional diagnostic materials.

The specimen in Group 34 appears to be intermediate in form between Norton Corner-notched or Manker Notched (White 1968:71) and later Koster Corner-notched (Perino 1971a:100). The specimen in this cateory appears to fit well with White's (1968) subtriangular varieties, which appear to date from late Middle Woodland through early Late Woodland. The specimen is larger than the type Koster Corner-notched, but the method of manufacture and the blank material is similar. The larger Norton and Manker Notched points have generally passed through a preform stage and exhibit primary and secondary flaking. The specimen in this class exhibits only secondary flaking and appears to have been made from a flake blank. Similar specimens in the Kansas City area appear to date from the late Middle Woodland period (Shippee 1967:36;Fig. 21, D) at the Shields site. Bell (1976:34) also indicates a late Middle Woodland period for similar points at the Trowbridge site in Kansas. Thus, the specimen appears not only to be intermediate in size but also in manufacturing technology. It is felt that these materials fit well morphologically with White's (1968) subtriangular varieties and that her estimate of late Middle Woodland to early Late Woodland is probably correct for the chronological placement of the specimen.

Thus, the projectile points recovered from the site indicate that a Woodland component is present on the site. The specimen in Group 34 would tend to indicate a late Middle Woodland through early Late Woodland component. Previous excavations on the site (Grantham 1979:257-282), indicated that Middle Woodland, late Middle Woodland - early Late Woodland, and Late Woodland components were all present on the site.

The remainder of the point fragments (Groups 47 and 48) are not particularly informative. The specimen in Group 54 indicates another activity (i.e. piercing or rotary motion). The relatively large number of point fragments and biface fragments indicates a long use-life for tools and heavy reuse of tools until too fragmentary to be useable. Attempts to work even small and blocky chert can be seen in the miscellaneous worked chert (Group 83).

Flake tools (Group 86) are not numerous when compared with the larger number of other tools and the greater number of such tools common in other areas. Cutting activities appear to be dominant in the utilized flakes. In general, most of the chert flakes larger than one-half inch as well as fragments of flake tools smaller than that have been utilized. The presence of chert cores (Groups 77 and 80) indicates the use of local sources of materials. The level of use of these materials appears to relatively higher than on other sites in the area, but this may simply be an artifact of sample size.

Again, as with many of the sites in the area, the percentages of ground and pecked stone is relatively high. Seventy-two percent of the total morphologically recognizable tools are in this class. The specimens in Groups 90 and 91 appear to be connected with plant processing. Group 92 appears to be a multi-functional category. Some of the specimens in this category may also be associated with plant processing. Specimen 92:a appears to have been used with a heavier degree of force and appears to have been utilized in direct contact with dense materials. Specimen 92:c is small and does not appear to have been connected with plant processing, although the nature of the tool is unknown.

The single sherd in Group 126 is too highly eroded to make any meaningful statements. No attempt was made to divide chert waste into local or non-local materials, as much of the chert waste was obtained from the surface. The presence of quartz waste does, however, indicate the use of local materials. The fire-cracked rock to closely matches the rock samples from the immediate area except that limestone is present on the site in a lower proportion than in the samples to the east. No samples were obtained to the west of the site, and it is reasonable to expect that the percentage of limestone would have been lower in the river. If this were the locus of procurement, then we have no samples to compare the fire-cracked rock from the site.

In summary, the site appears to have Middle Woodland and Late Woodland components on the site. The ceramics in this sample are not particularly informative, although ceramics recovered in test excavations (Grantham 1979) were more similar to Weaver wares. Plant processing appears to have been the dominant activity on the site with hunting playing a less important role. Based on the presence of the types of plant processing tools, it is posited that the site represents a fall seasonal site.

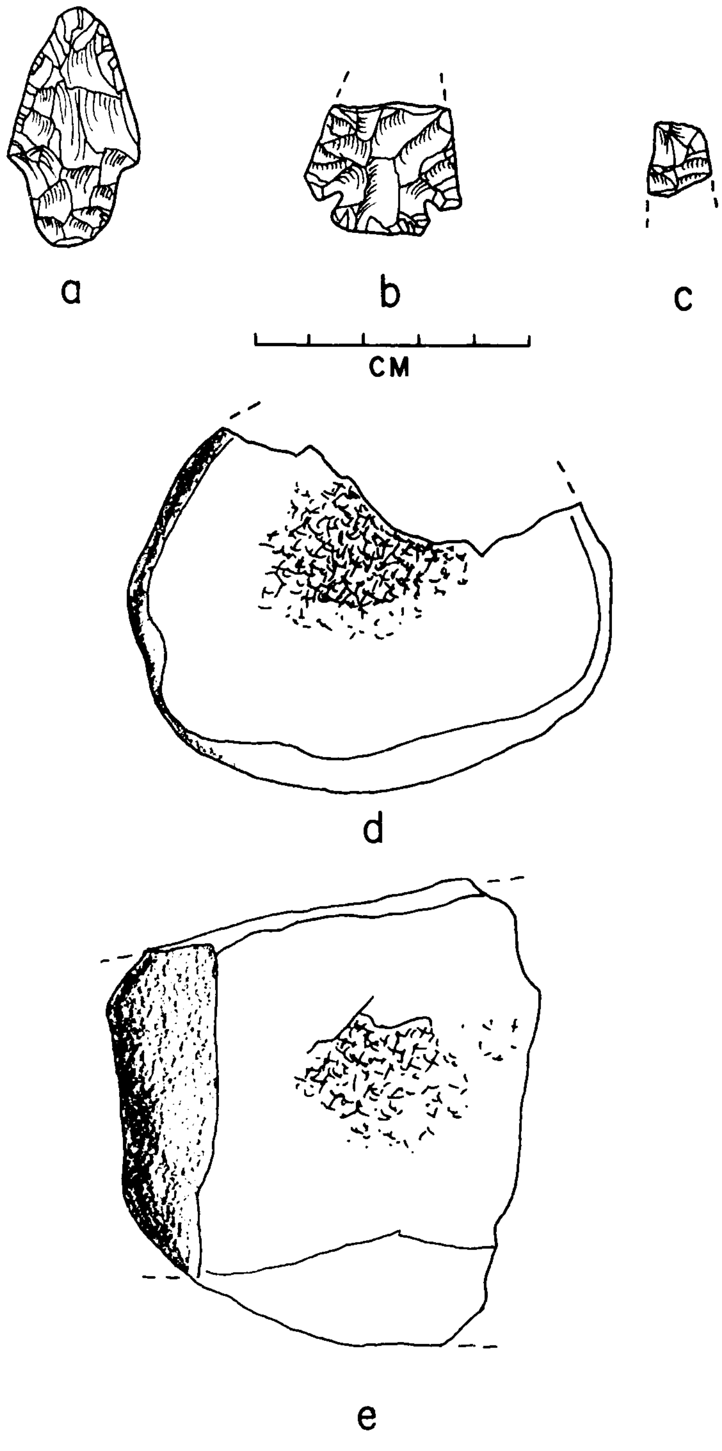


Figure 55. 23MC58. Artifacts. (a) Group 2, (b) Group 34, (c) Group 54.

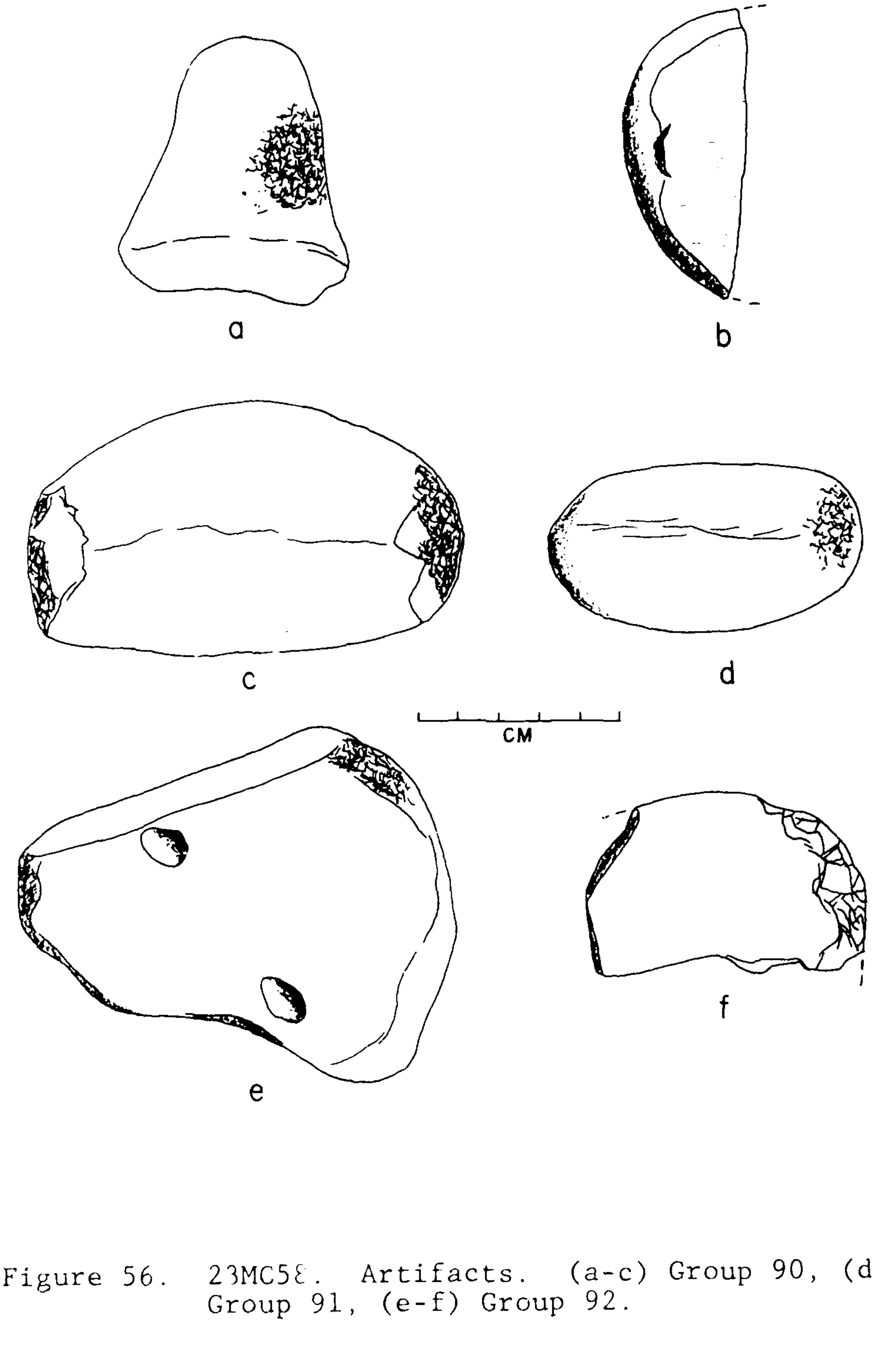


Figure 56. 23MC58. Artifacts. (a-c) Group 90, (d) Group 91, (e-f) Group 92.

23MC61

This site lies on the ridgetop dividing the East Fork and the Long Branch. The site is located approximately one quarter mile south of the Axtel road relocation. The site lies on top of the divide between the two drainages and is thus long and narrow. The approximate dimensions are 250 feet north-south by 80 feet east-west. The approximate elevation of the site is 860-870 feet m.s.l. Most of the southern edge of the site has been cultivated for a number of years. The northern portion was in dense grass, and visibility was poor. Material density was high and appears to come from a single occupation. Surface material was recovered from the area of the shed and sorghum oven near the center of the site. These features had been buried under the clearing contract, and this area was bare.

Although additional excavations on the site would be desirable, the main body of the site will not be heavily impacted by further construction. Previous surface collections (Graham 1977) indicated that a Late Archaic component was present on the site. Subsequent test excavations on the site (Grantham 1979) indicated that the portion of the site collected by Graham had been heavily disturbed, and that additional excavations in that area would not be productive. Subsequent collecting in the area indicated that the site continues to the north into the field. An additional test was placed in the field to the north (Figure 57) in order to determine if undisturbed deposits were present in this area.

One, one and one-half meter square was laid out for excavation, approximatley seven meters north of the fence line crossing the site. The square was excavated in arbitrary ten centimeter levels to a depth which was nearly culturally sterile. A total of two, ten centimeter levels were dug in the square to a total depth of twenty centimeters below the surface.

The only physical stratigraphy noted was the result of soil horizonation. An A-horizon extended from the surface to a depth of 7.5 centimeters below the surface. A B1-horizon extended from that depth to approximately 20 centimeters below the surface. A B2t-horizon extended to an undetermined depth below that point.

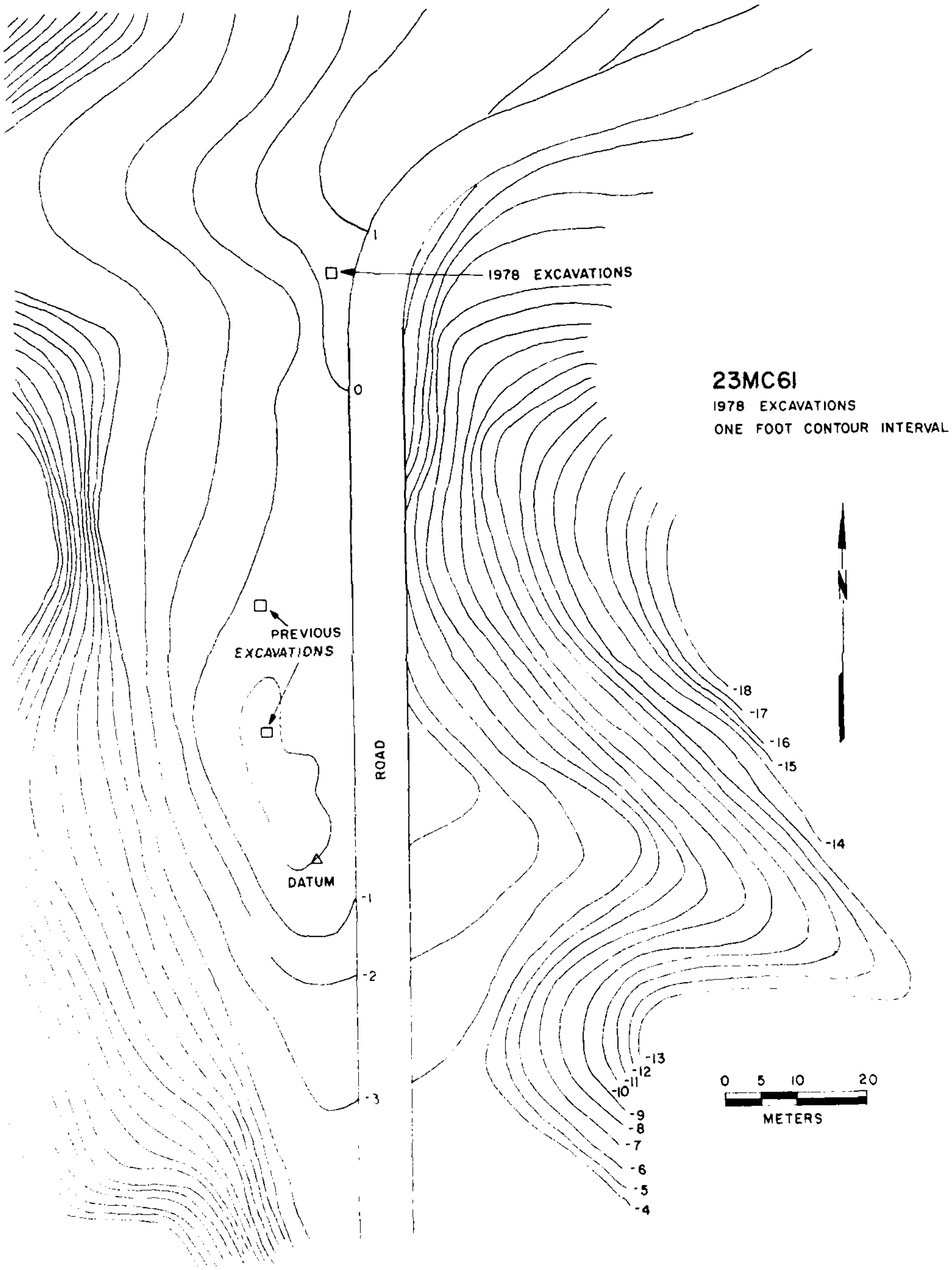


Figure 57. 23MC61. Site Map and Location of Excavations.

Ground and/or Pecked Stone

Group 90:a-c Pecked or Pitted Stone - 3 (Figure 58, a-c)

These specimens exhibit one or more pecked faces. They range from light pecked areas to random deeper pittings. One specimen exhibits pecking on both faces, and two specimens exhibit pecking on one face only. The degree of force appears to generally have been light. One specimen (specimen 90:a) exhibits one face with heavier pecking. Pecking on all specimens is centered on the face, but in no instance is an actual pit created.

Group 91:a-c Ground Stone - 3 (Figure 58, d-e)

These specimens exhibit grinding on one face. All three specimens are fire-cracked and are too fragmentary to determine if grinding was the sole modification, and one specimen (91:b) exhibits slight polish.

Group 110:a Utilized Fire-cracked Rock - 1
(Figure 58, f)

This specimen is a piece of fire-cracked rock split from a larger cobble. The specimen is thin and roughly circular. It exhibits cultural modification around approximately three-quarters of the circumference of the specimen. Modification consists of utilization in the form of flake removal from lateral margins. The specimen is argillite, and flake removal is bifacial. The specimen exhibits slight edge rounding.

Ceramics

Group 126:a-b Pottery - 2

Sample: 2 highly eroded body sherds, sand-tempered.

Paste:

Temper: Round, sand-sized particles. Particles are small (.1 to .7 mm).

Texture: Paste is fairly friable. Lamination is parallel to the interior-exterior surfaces. Sherds break iregularly.

Color: Color is red (5YR5/4) on both interior and exterior surfaces.

Method of Manufacture: Vessels were probably lump modeled as there are no straight breaks indicative of coiling.

Surface Finish: Undetermined.

Decoration: Undetermined.

Form: Undetermined.

Waste

Group 134: Chert Waste - 28

A total of fourteen chert flakes and two pieces of chert shatter were recovered from the excavations. Nine chert flakes and three pieces chert shatter were recovered from the surface.

Group 141: Fire-cracked Rock - 79

A total of 37 pieces of fire-cracked rock were recovered from the excavations and 42 pieces of fire-cracked rock were recovered from the surface.

Group 142: Unmodified Stone - 46

The material included in this category lacks any evidence of intentional or unintentional cultural modification.

Historic

Group 144:a Historic - 1

A single brass shotgun shell base was recovered near the surface. It bears the inscription "Peters Target, No. 16".

TABLE 21

Artifact Measurements and Attributes - 23MC61

Cat. No.		Length	Width	Thickness	Weight (gm)	Remarks
Ground/Pecked Stone						
Pecked Stone						
90:a	Sur.	109	80	52	689g	Felsite 2p
90:b	Sur.	93	66	40	321g	Quartzite 1p
90:c	Sur.	72	64	44	260g	Argillite 1p
Ground Stone						
91:a	Sur.	84*	76*	52*	424g*	Quartzite 1g?
91:b	Sur.	75*	52*	45*	272g*	Diorite 1g?
91:c	Sur.	*	*	*	27g*	Argillite 1g?
Utilized Fire-cracked Rock						
110:a	Sur.	60	56	15	47g	Argillite, 2 util. edges

TABLE 22

DISTRIBUTIONAL SUMMARY - 23MC61

	90	91	110	126	134	141	142	144
[illegible] L.1	-	-	-	-	9	13	16	1
L.2	-	-	-	2	7	24	23	-
Surface	3	3	1	-	9	42	3	-

The Site Assemblage: 23MC61

The recovered material does not readily lend itself to identification of the components represented on the site. Earlier surface collections and testing of the site (Graham 1977) recovered one proximal point fragment and one highly modified point fragment. The one proximal point fragment is very similar to the type Etley Stemmed, while the other point fragment appears to be a modified lanceolate point. It may have been originally like Sedalia Lanceolate. It would appear that a Late Archaic component was present on the site based on the Etley Stemmed point. A single projectile point is, however, a rather meager basis for the assignment of a component to a site.

The numbers of recovered ground and pecked stone from the surface of the site would tend to indicate the relative importance of plant processing. The pecked and ground stone in Groups 90 and 91 appear to be tools connected with plant processing. The specimen in Group 110 appears to have been an incidental tool. The edge modification would indicate that the specimen was used as a cutting tool. The two sherds from the second level of the excavation unit indicates that a Woodland component is present in the northern part of the site. Earlier testing (Grantham 1979) failed to indicate a Woodland component in the southern part of the site. The remainder of the material is waste materials.

The test excavations to the north of the original site area as defined by Graham (1977) indicates that undisturbed deposits are present, and that at least a portion of the site appears to have relatively good presevation. On the basis of the present information, the site appears to have Late Archaic and Woodland components and appears to have been a fall seasonal site.

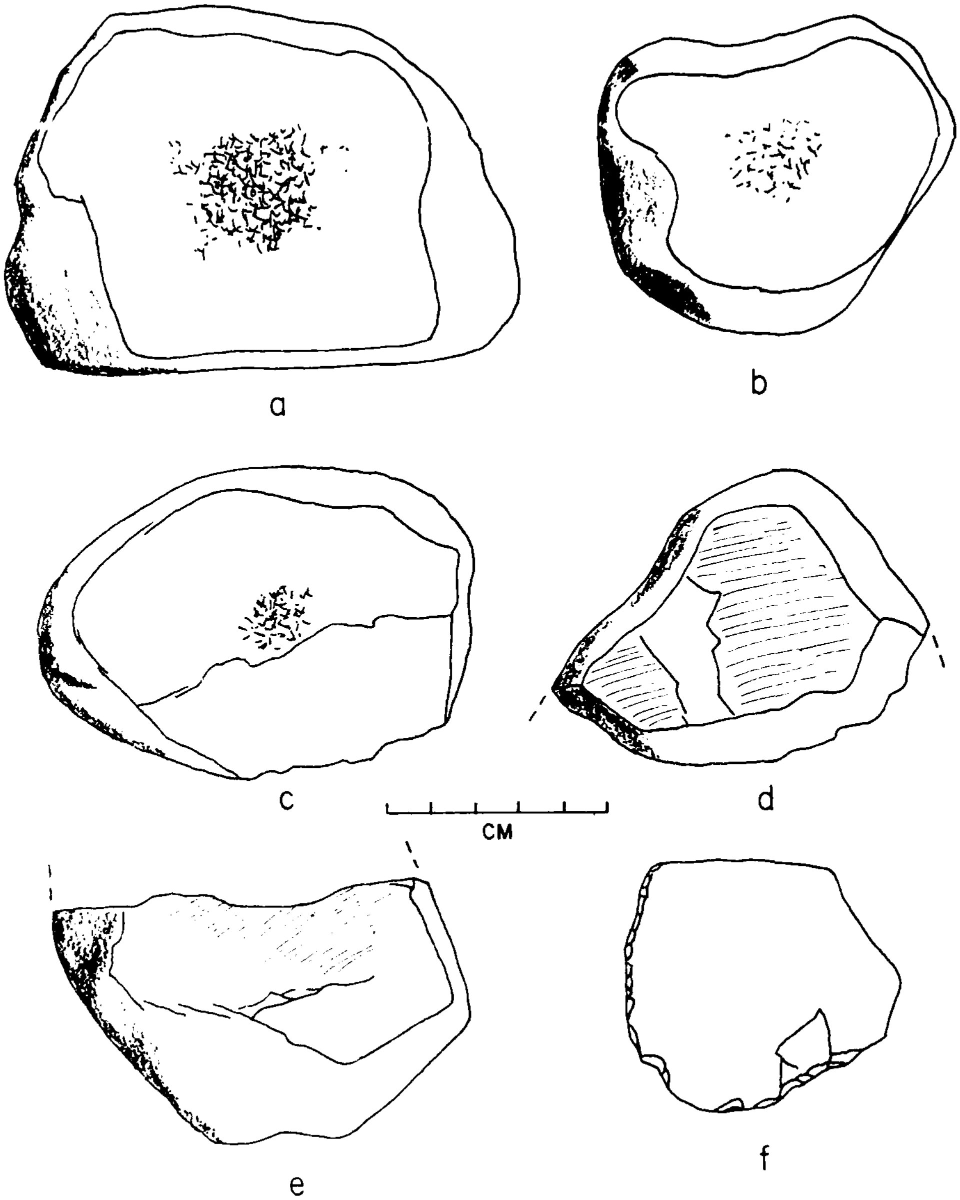


Figure 58. 23MC61. Artifacts. (a-c) Group 90, (d-e) Group 91, (f) Group 110.